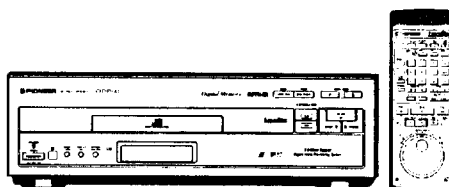


Service Manual

PIONEER®
The Art of Entertainment



• CLD-D790

ORDER NO.
RRV1542

CD CDV LD PLAYER

CLD-D790

CLD-D590

CLD-D390

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model			Power Requirement	Remarks
	CLD-D790	CLD-D590	CLD-D390		
TD	○	○	○	AC110-240V	
TL	○	○	○	AC110-240V	

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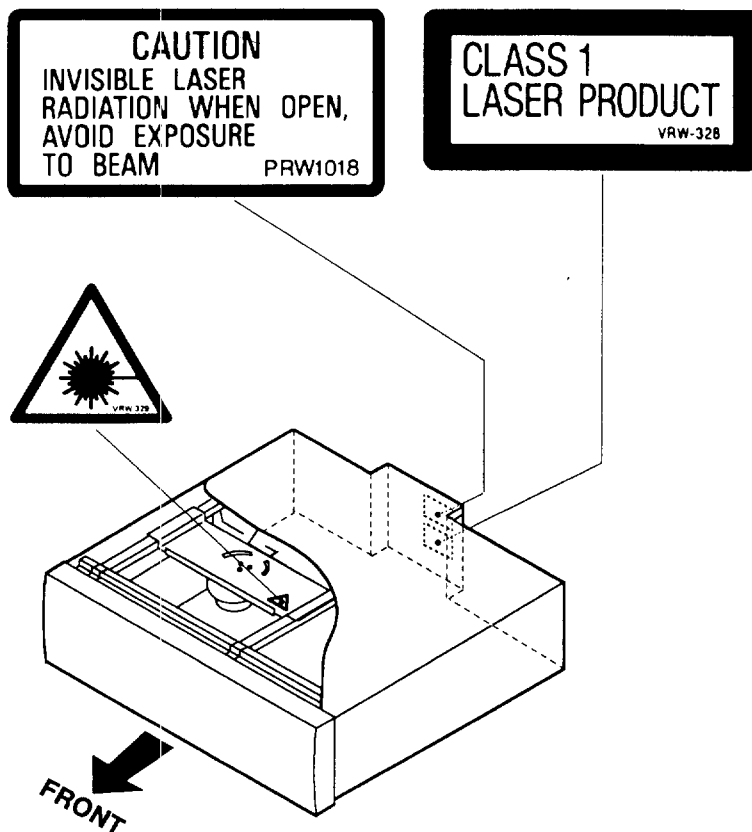
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T-IFM MAR. 1996 Printed in Japan

1. SAFETY INFORMATION

VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.	 LASER Kuva 1 Lasersäteilyn varoitusmerkki	WARNING! DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.	 LASER Picture 1 Warning sign for laser radiation
ADVERSEL: USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.	IMPORTANT THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.		
VARNING! OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.	LASER DIODE CHARACTERISTICS MAXIMUM OUTPUT POWER: 5 mw WAVELENGTH: 780-785 nm		

LABEL CHECK (for TL Type)



- Additional Laser Caution**
1. The ON/OFF statuses of the side-A/B detection switch (TURN switch on the TNSB assy), slider-position detection switches (INNER and OUTER on the PKSB assy) and loading-status detection switches (SW 1, 2 and 3 on the LMSB assy) are detected by the microprocessor (IC101 in the MOTHER assy). To permit the laser diode to oscillate, it is required to set the side-A/B detection switch for side A status (TRN : OFF) and the slider-position detection switches for the LD ACTIVE status (INNER : OFF, OUTER : OFF), and to set the loading-status detection switches for tilt neutral state (SW1 : OFF, SW2 : OFF, SW3 : ON). As long as these requirements are not satisfied, the laser diode will not oscillate. When the requirements are met in any way, the laser diode can oscillate. The laser diode oscillation will continue if pin 13 of IC801 is shorted to GND or the emitter and collector of Q834 are shorted each other (fault condition) in MOTHER assy.
 In the test mode *, the laser diode oscillates when the microprocessor detects a PLAY signal, or when the PLAY key is pressed (S108 ON in the FLKY assy for CLD - D790 or S208 ON in the KEYB assy for CLD - D590 and CLD - D390), with the above requirements satisfied.
 2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* : Refer to pages 58 and 59.

2. PACKING, EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- Parts list without notice are common for CLD-D790/TD, TL, CLD-D590/TD, TL, CLD-D390/TD and TL.

2.1 PACKING

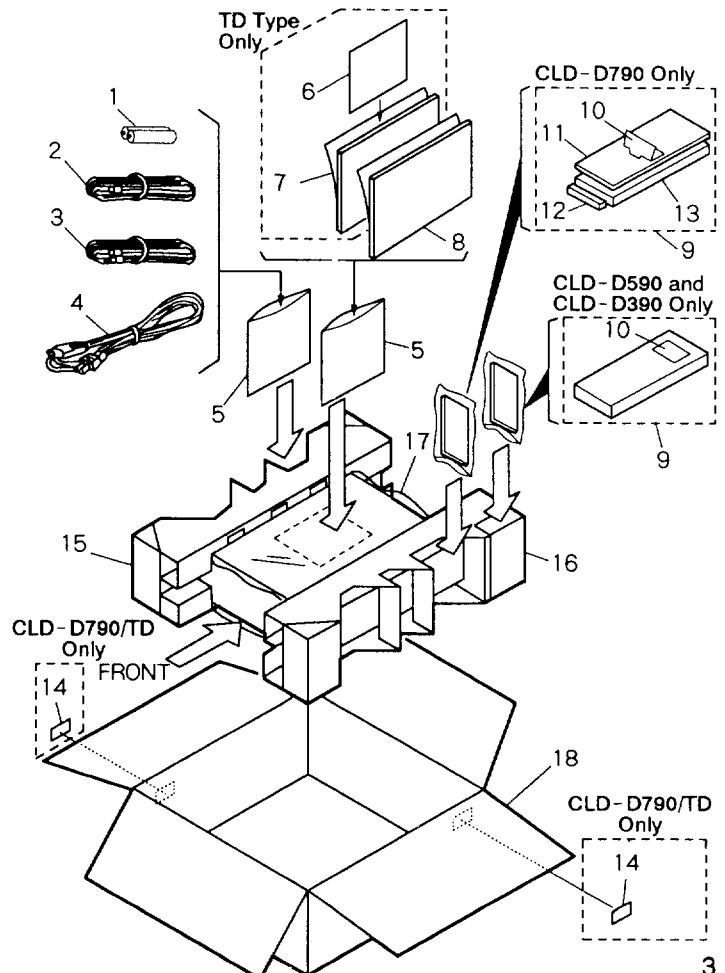
(1) CONTRAST OF CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD AND TL.

CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD and TL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.						Remarks
			CLD - D790 /TD	CLD - D790 /TL	CLD - D590 /TD	CLD - D590 /TL	CLD - D390 /TD	CLD - D390 /TL	
NSP	1	Dry Cell Battery (R03, AAA)	VEM-022	VEM-022	VEM-022	VEM-022	Not used	Not used	
NSP	1	Dry Cell Battery (R6P, AA)	Not used	Not used	Not used	Not used	VEM-013	VEM-013	
Δ	4	AC Power Cord	ADG1158	ADG1154	ADG1158	ADG1154	ADG1158	ADG1154	
NSP	6	Warranty Card	ARW1020	Not used	ARW1020	Not used	ARW1020	Not used	
	7	Operating Instructions (Spanish/Portuguese)	VRD1054	Not used	VRD1054	Not used	VRD1054	Not used	
	9	Remote Control Unit	VXX2243	VXX2243	VXX2412	VXX2412	VXX2400	VXX2400	
	10	Battery Cover	DNK2286	DNK2286	VNK3668	VNK3668	VNK2806	VNK2806	
	11	Case (Below)	VNK2062	VNK2062	Not used	Not used	Not used	Not used	
	12	Filter	VNK2063	VNK2063	Not used	Not used	Not used	Not used	
	13	Case (Upper)	VNK3135	VNK3135	Not used	Not used	Not used	Not used	
	14	TD Label	VRW1606	Not used	Not used	Not used	Not used	Not used	
	18	Packing Case	VHG1554	VHG1554	VHG1556	VHG1557	VHG1558	VHG1559	

(2) PARTS LIST FOR CLD - D790/TD

Mark	No.	Description	Part No.
NSP	1	Dry Cell Battery (R03, AAA)	VEM-022
	2	Video Cord	VDE1048
	3	Audio Cord	VDE1047
Δ	4	AC Power Cord	ADG1158
	5	Polyethylene Bag (230 × 340 × 0.03)	Z21-038
NSP	6	Warranty Card	ARW1020
	7	Operating Instructions (Spanish/Portuguese)	VRD1054
	8	Operating Instructions (English/Chinese)	VRE1045
	9	Remote Control Unit	VXX2243
	10	Battery Cover	DNK2286
	11	Case (Below)	VNK2062
	12	Filter	VNK2063
	13	Case (Upper)	VNK3135
	14	TD Label	VRW1606
	15	Protector L	VHB1054
	16	Protector R	VHB1055
	17	Mirror Mat	VHL1012
	18	Packing Case	VHG1554



CLD - D790, CLD - D590, CLD - D390

2.2 EXTERIOR AND DISC TRAY SECTION

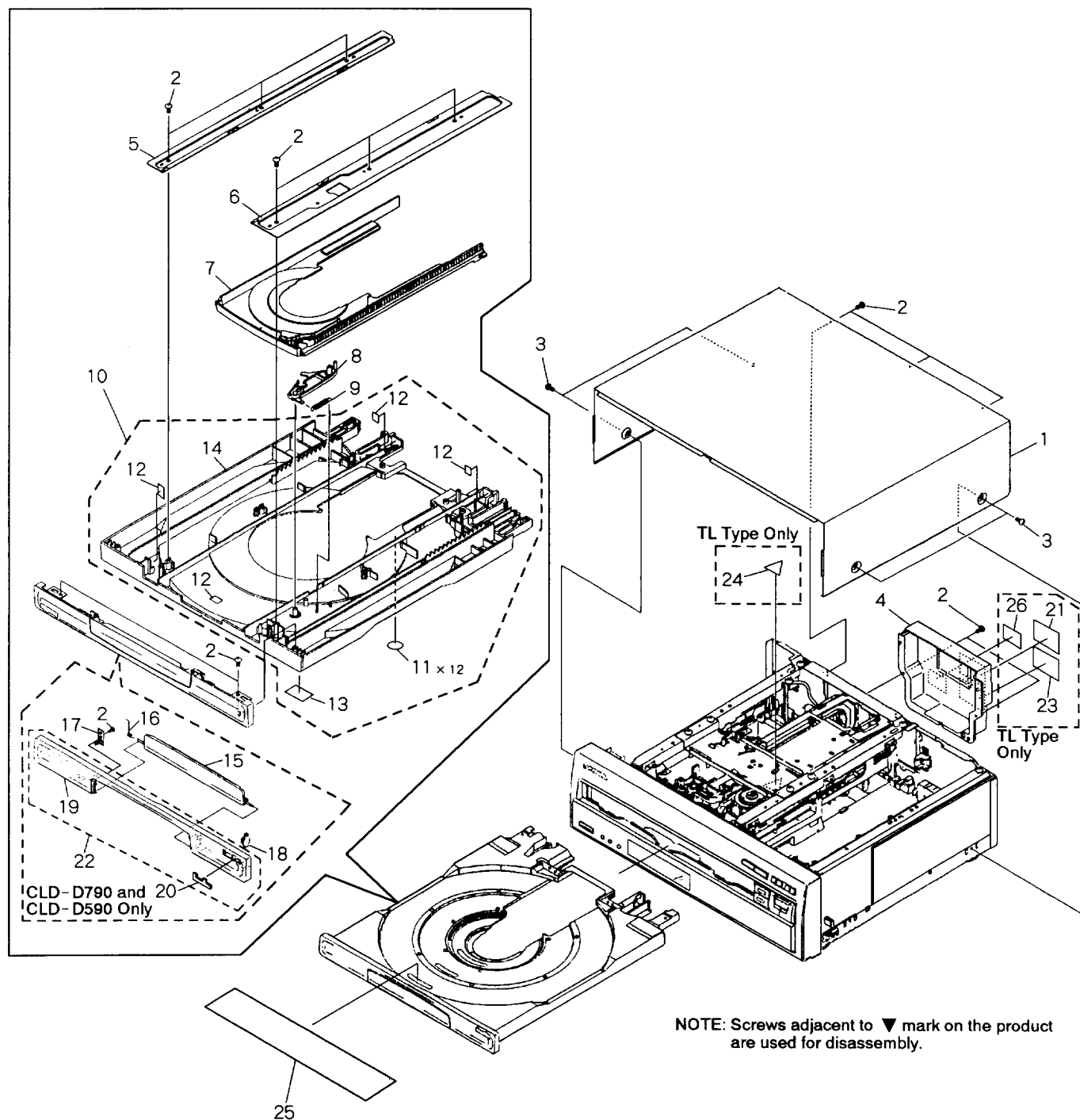
(1) CONTRAST OF CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD AND TL.

CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD and TL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.						Remarks
			CLD - D790 /TD	CLD - D790 /TL	CLD - D590 /TD	CLD - D590 /TL	CLD - D390 /TD	CLD - D390 /TL	
	4	Rear Cover	VNK3733	VNK3738	VNK3734	VNK3739	VNK3735	VNK3740	
	19	Tray Panel	VNK3624	VNK3624	VNK3624	VNK3624	VNK3718	VNK3718	
	20	Name Plate	VAM1029	VAM1029	VAM1029	VAM1029	Not used	Not used	
	21	Caution Label	Not used	PRW1018	Not used	PRW1018	Not used	PRW1018	
	22	Tray Panel Assy - S	VXX2409	VXX2409	VXX2409	VXX2409	Not used	Not used	
NSP	23	Caution Label (F)	Not used	VRW - 328	Not used	VRW - 328	Not used	VRW - 328	
	24	Caution Label (G)	Not used	VRW - 329	Not used	VRW - 329	Not used	VRW - 329	
NSP	26	SISIR Label	Not used	VRW1609	Not used	VRW1608	Not used	VRW1607	

(2) PARTS LIST FOR CLD - D790/TD

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Bonnet S	VXX2252		11	Cushion	VEC1682
	2	Screw	BBZ30P080FMC		12	Damp Cushion	VEC1683
	3	Screw	BCZ40P060FZK	NSP	13	Label	VRW1289
	4	Rear Cover	VNK3733		14	LD Tray Assy	VXA2173
	5	Guide Plate (R)	VNE1939		15	CD Door Assy	VXA2275
	6	Guide Plate (L)	VNE1938		16	Door Spring	VBH1248
	7	CD Tray	VNK3007		17	Door Holder	VNL1704
	8	Lock Plate	VNL1703		18	Damper Assy	VXA1999
	9	Lock Plate Spring	VBH1188		19	Tray Panel	VNK3624
	10	Tray Assy - S	VXX2307		20	Name Plate	VAM1029
					21	• • • • •	
					22	Tray Panel Assy - S	VXX2409
					23	• • • • •	
					24	• • • • •	
					25	Mirror Mat Sheet	VHL1039
					26	• • • • •	



CLD - D790, CLD - D590, CLD - D390

2.3 TOP VIEW SECTION

(1) CONTRAST OF CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD AND TL.

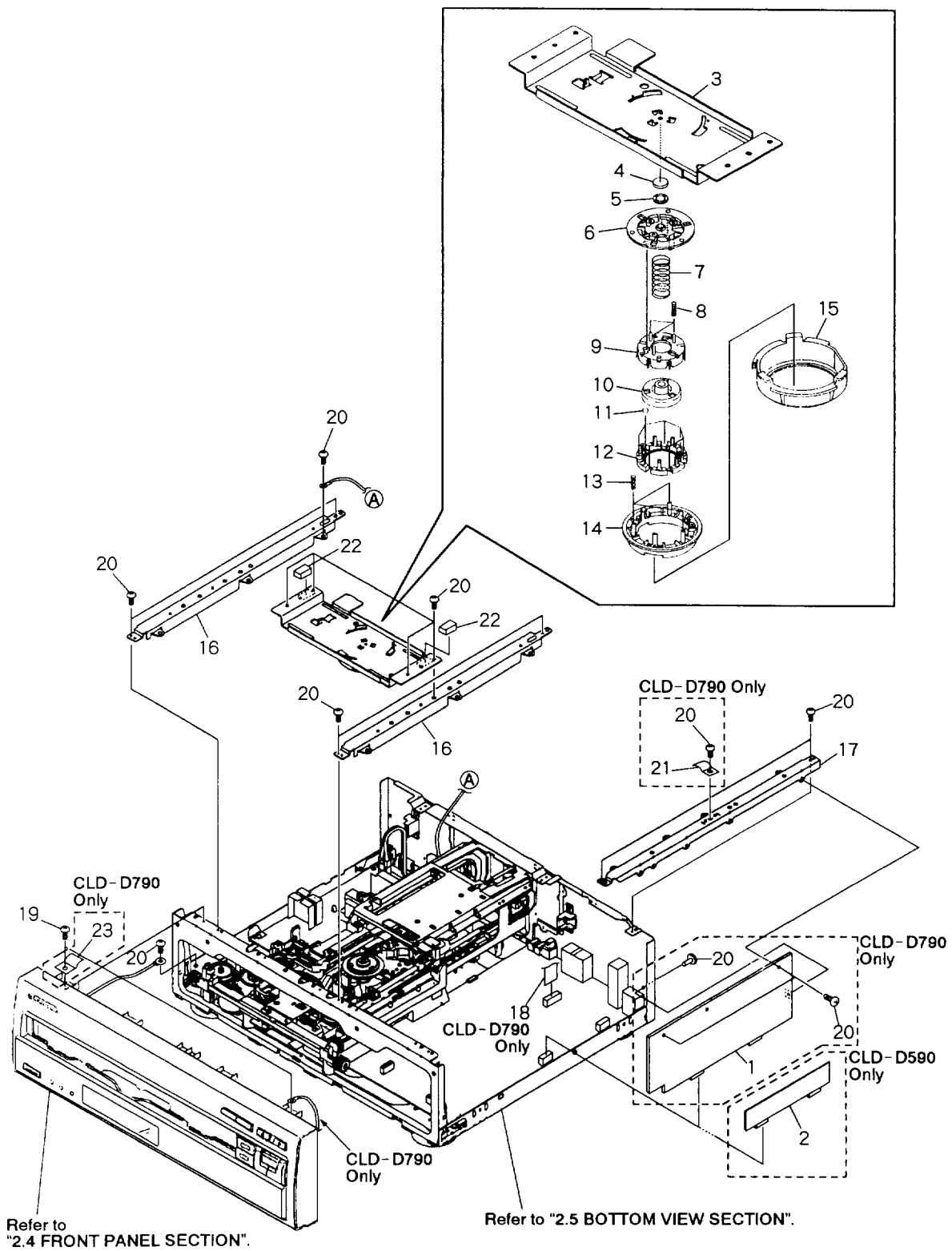
CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD and TL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.						Remarks
			CLD - D790 /TD	CLD - D790 /TL	CLD - D590 /TD	CLD - D590 /TL	CLD - D390 /TD	CLD - D390 /TL	
NSP	1	YCPB Assy	VWV1502	VWV1502	Not used	Not used	Not used	Not used	
	2	CNNB Assy	Not used	Not used	VWV1472	VWV1472	Not used	Not used	
	18	Flexible Cable (10P) (MOTHER CN703 - PEGB CN3001)	VDA1550	VDA1550	Not used	Not used	Not used	Not used	
NSP	21	Earth Plate	VNE1518	VNE1518	Not used	Not used	Not used	Not used	
	23	FCC Plate	VNE2086	VNE2086	Not used	Not used	Not used	Not used	

(2) PARTS LIST FOR CLD - D790/TD

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	YCPB Assy	VWV1502		16	Center Angle	VNE1965
	2	• • • • •		NSP	17	PCB Holder	VNE1964
	3	Center Plate	VNE1971		18	Flexible Cable (10P) (MOTHER CN703 - PEGB CN3001)	VDA1550
	4	Rubber Mat	VEB1114		19	Screw	IBZ30P080FMC
	5	Thrust Holder	VNL1663				
	6	Clamper Head	VNL1603		20	Screw	BBZ30P080FMC
	7	LD Spring	VBH1240	NSP	21	Earth Plate	VNE1518
	8	Cover Spring	VBH1234	NSP	22	Damp Cushion	VEC1602
	9	Ball Cover	VNL1602		23	FCC Plate	VNE2086
	10	LD Hab	VNT1047				
	11	Steel Ball	VNX1013				
	12	Ball Guide	VNL1616				
	13	Clamp Spring	VBH1239				
	14	Clamper	VNL1604				
	15	Clamper Holder	VNL1680				

CLD - D790, CLD - D590, CLD - D390

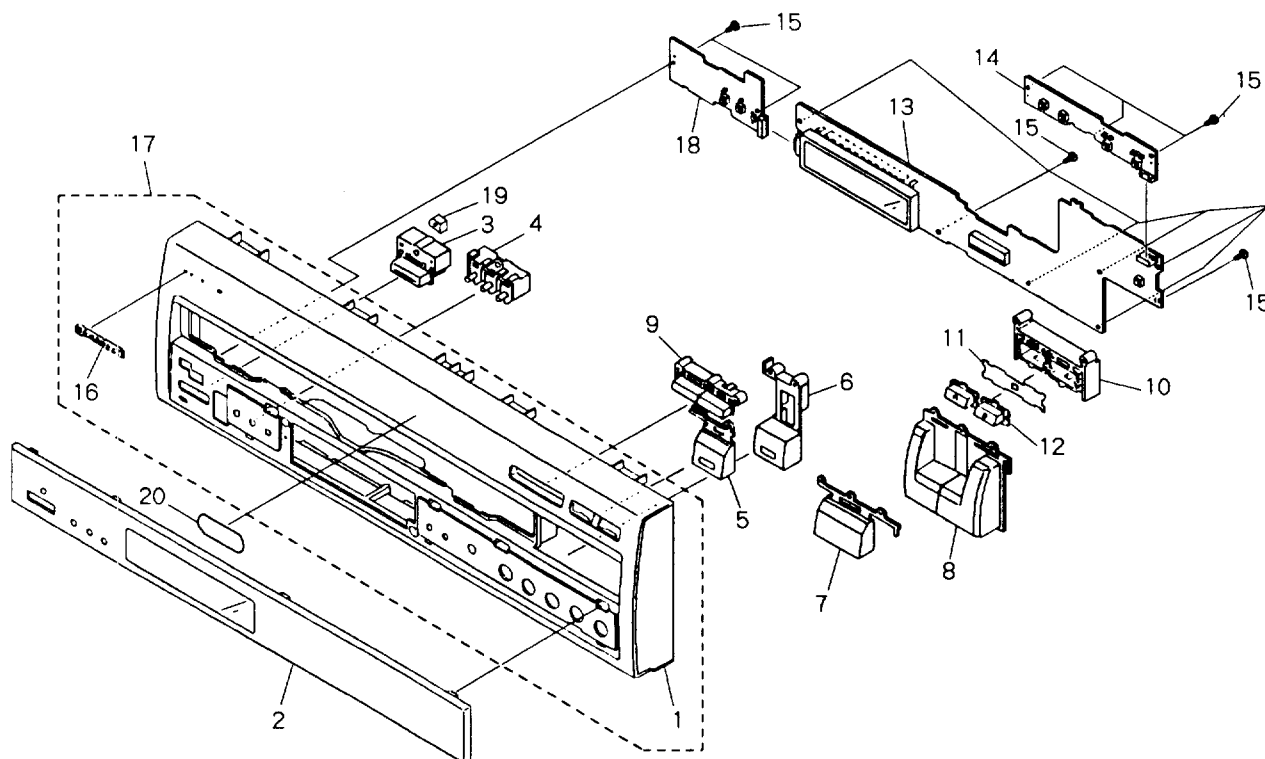


2.4 FRONT PANEL SECTION

(1) FOR CLD - D790

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	Front Panel	VNK3709	11	Sheet	VEC1849	
	2	FL Panel	VNK3715	12	Disc Side Key	VNK3468	
	3	Power Button	VNK2329	13	FLKY Assy	VWG1732	
	4	L Key B	VNK3008	NSP	14	KEYB Assy	VWG1728
	5	LD Key Assy	VXA2276		15	Screw	BBZ30P080FMC
	6	CD Key Assy	VXA2277	16	Name Plate	PAM1608	
	7	Play Key	VNK3720	17	Front Panel Assy - S	VXX2422	
	8	Key A	VNK3719	NSP	18	PWSB Assy	VWG1729
	9	Skip Key	VNK3630		19	LED Lens	PNW2019
	10	LED Holder	VNK3467	NSP	20	Getter	VRW1599



(2) FOR CLD - D590 AND CLD - D390

• CONTRAST OF CLD - D590/TD, TL, CLD - D390/TD AND TL

CLD - D590/TD, TL, CLD - D390/TD and TL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.				Remarks
			CLD - D590/TD	CLD - D590/TL	CLD - D390/TD	CLD - D390/TL	
NSP	1	Front Panel	VNK3710	VNK3710	VNK3724	VNK3724	
	2	FL Panel	VNK3716	VNK3716	VNK3717	VNK3717	
	17	Front Panel Assy - S	VXX2423	VXX2423	VXX2424	VXX2424	
NSP	19	Getter	VRW1600	VRW1600	VRW1601	VRW1601	

• PARTS LIST FOR CLD - D590/TD

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	Front Panel	VNK3710	11	Sheet	VEC1849	
	2	FL Panel	VNK3716	12	Disc Side Key	VNK3468	
	3	Power Button	VNK2329	13	FLKY Assy	VWG1721	
	4	L Key C	VNK3070	14	KEYB Assy	VWG1709	
	5	LD Key Assy	VXA2276	15	Screw	BBZ30P080FMC	
	6	CD Key Assy	VXA2277	16	Name Plate	PAM1608	
	7	Play Key	VNK3720	17	Front Panel Assy - S	VXX2423	
	8	Key A	VNK3719	18	LED Lens	PNW2019	
	9	Skip Key	VNK3630	19	Getter	VRW1600	
	10	LED Holder	VNK3467				

2.5 BOTTOM VIEW SECTION

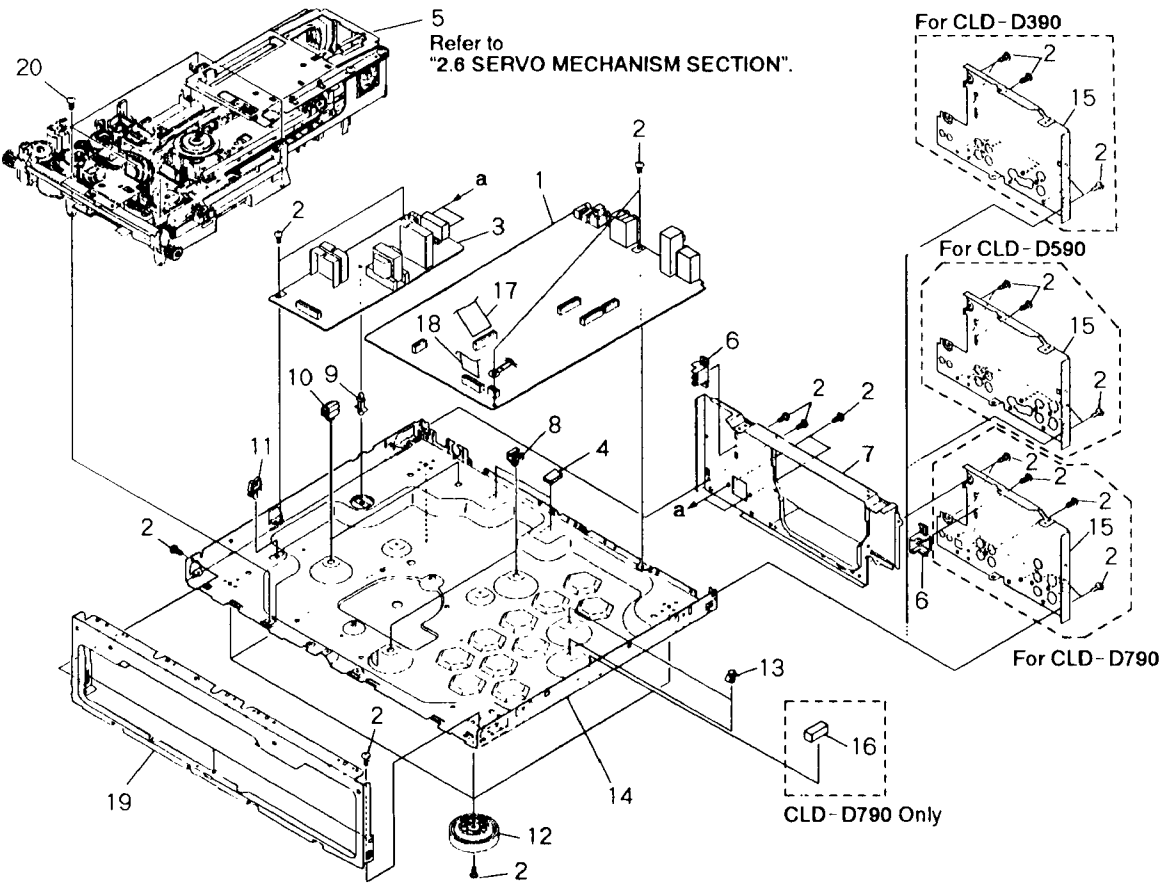
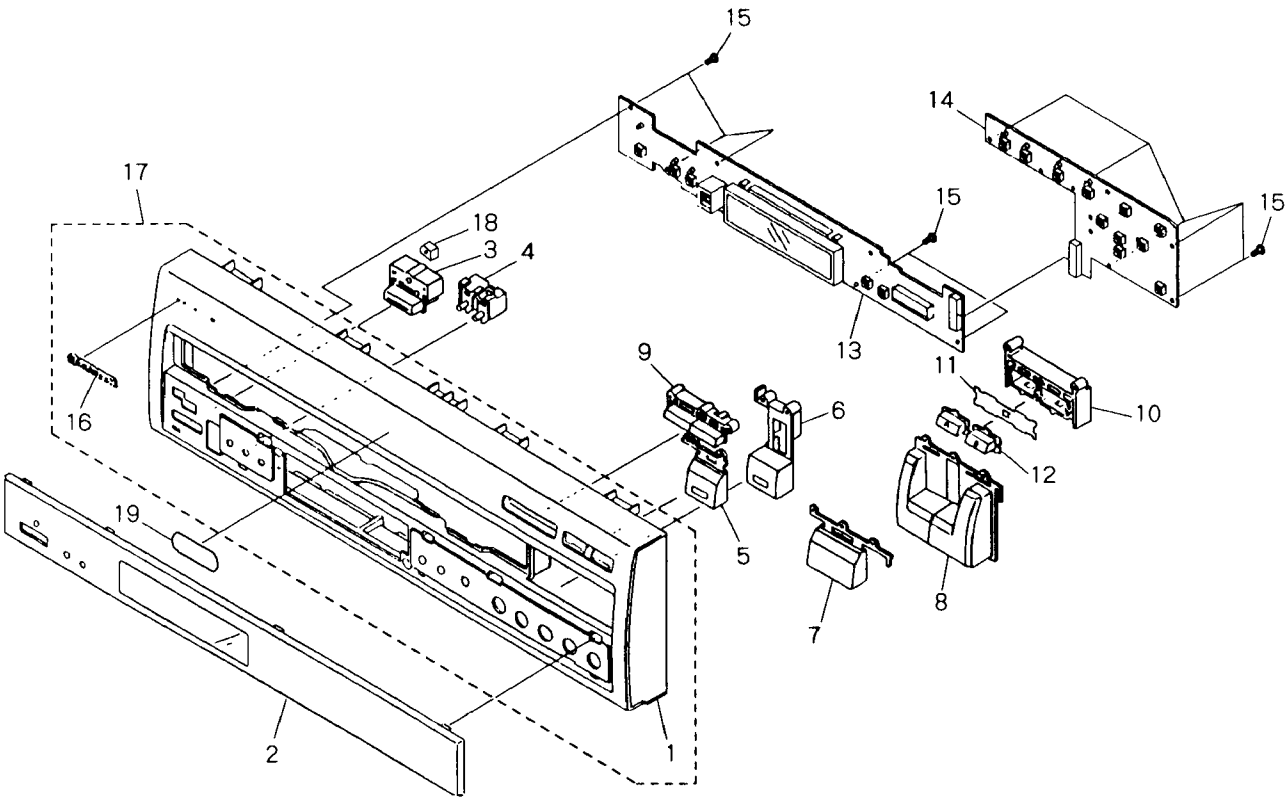
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CLD - D790/TD, TL, CLD - D590/TD, TL, CLD - D390/TD and TL have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.						Remarks
			CLD - D790 /TD	CLD - D790 /TL	CLD - D590 /TD	CLD - D590 /TL	CLD - D390 /TD	CLD - D390 /TL	
	1	MOTHER Assy	VWS1230	VWS1230	VWS1229	VWS1229	VWS1228	VWS1228	
	7	Rear Panel (R)	VNA1756	VNA1734	VNA1756	VNA1734	VNA1756	VNA1734	
	15	Rear Panel (L)	VNA1731	VNA1731	VNA1732	VNA1732	VNA1733	VNA1733	
	16	Spacer	REB1171	REB1171	Not used	Not used	Not used	Not used	
	18	Flexible Cable (16P) (MOTHER CN121 - FLKY CN106)	VDA1488	VDA1488	Not used	Not used	Not used	Not used	
	18	Flexible Cable (18P) (MOTHER CN107 - FLKY CN101)	Not used	Not used	VDA1467	VDA1467	VDA1467	VDA1467	

(2) PARTS LIST FOR CLD - D790/TD

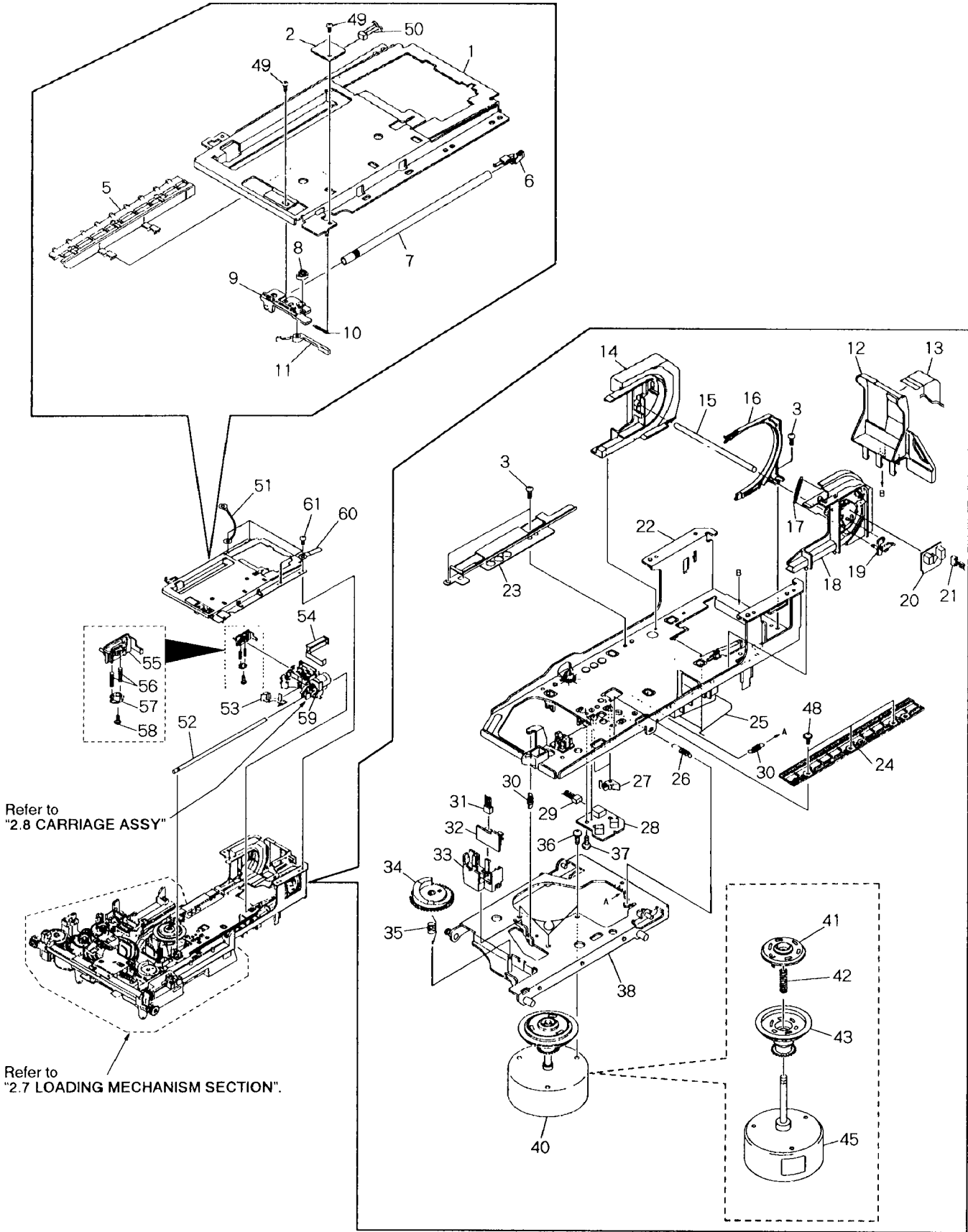
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	MOTHER Assy	VWS1230	NSP	11	Wire Clip (H)	VEC1181
	2	Screw	BBZ30P080FMC	NSP	12	Insulator	PNW1912
△	3	POWER SUPPLY Assy	VWR1270	NSP	13	Card Spacer A	VEC1708
NSP	4	Rubber Spacer	VEB1252	NSP	14	Chassis	VNA1564
NSP	5	Mechanism Assy	VWT1131	NSP	15	Rear Panel (L)	VNA1731
	6	Tray Stopper	VNL1657		16	Spacer	REB1171
	7	Rear Panel (R)	VNA1756		17	Flexible Cable (21P) (MOTHER CN102 - POWER SUPPLY CN202)	VDA1465
NSP	8	P Plate Holder	PNY - 405		18	Flexible Cable (16P) (MOTHER CN121 - FLKY CN106)	VDA1488
NSP	9	PC Support	VEC - 269				
NSP	10	PCB Hinge	VEC1174	NSP	19	Panel Holder	VNA1507
				NSP	20	Screw	BBZ30P100FMC



2.6 SERVO MECHANISM SECTION

Parts List

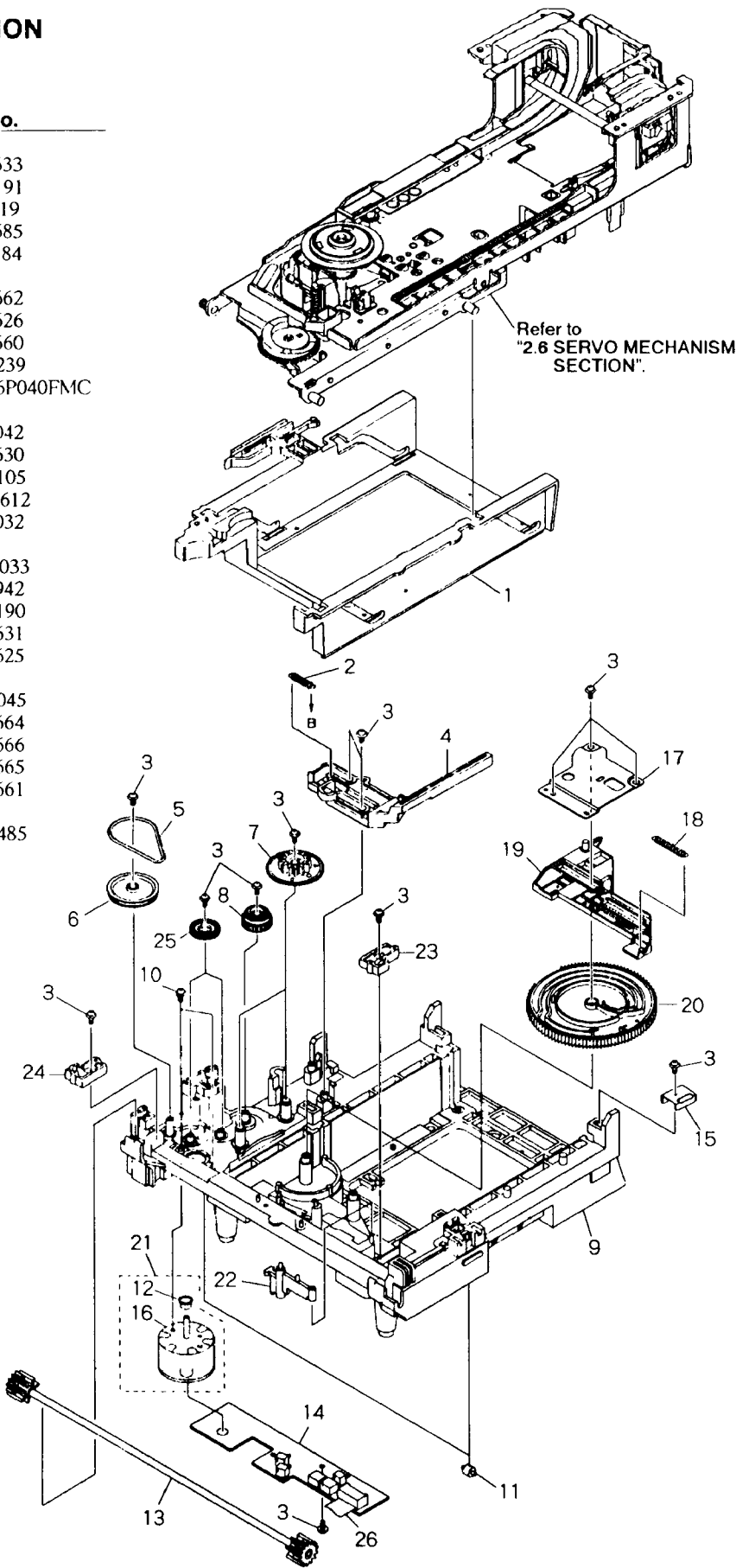
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
NSP	1	Tilt Base (upper)	VNE1969	NSP	31	Housing Assy (3P, Yellow)	VKP2046
	2	BISB Assy	VWG1558		32	FG Assy	VWG1556
	3	Screw	BBZ30P060FMC		33	FG Base	VNL1645
	4	• • • • •			34	Tilt Cam	VNL1643
	5	Rack (Upper)	VNL1679		35	Tilt Cam Spring	VBH1243
	6	Shaft Stay	VNL1671		36	Screw	PMA30P050FMC
	7	Carriage Shaft (upper)	VLL1478		37	Screw	IBZ26P120FMC
	8	B Cam	VNL1673		38	Motor Base	VNE1941
	9	Shaft Support	VNL1672		39	• • • • •	
	10	Support Spring	VBH1265		40	Spindle Motor Assy	VXA2271
	11	SW Lever (B)	VNL1678	NSP	41	PRC Hub	VNL1684
	12	Large hill	VNL1682		42	Centering Spring	VBH1269
	13	Flexible Cable (23P)	VDA1528		43	R Turn Table Assy	VXA2225
	14	Turn Guide	VNL1701		44	• • • • •	
	15	FFC Style Shaft	VLL1474		45	Spindle Motor	VXM1057
	16	Guide	VNL1674		46	• • • • •	
	17	Lever Spring	VBH1266		47	• • • • •	
	18	Turn Gear	VNL1702		48	Screw	IBZ26P060FMC
	19	SW Lever (T)	VNL1695		49	Screw	BPZ20P040FZK
	20	TNSB Assy	VWG1557		50	Housing Assy (2P, Red)	VKP2060
	21	Housing Assy (3P, Black)	VKP2059	NSP	51	Earth Lead Unit	DE007VF0
	22	Tilt Base (Under)	VNL1670		52	Carriage Shaft (Under)	VLL1493
	23	TAN Guide	VNE1973		53	Body Guard	VNL1681
	24	CA Rack	VNL1647		54	FFC Holder	VNL1706
	25	FFC Style Spring	VBH1270		55	CA Guide	VNL1668
NSP	26	Thrust Spring	VBH1245		56	TAN Spring (B)	VBH1264
	27	CA - SW Lever	VNL1644		57	TAN Lever (B)	VNL1669
	28	PKSB Assy	VWG1555		58	Screw	PMZ20P060FZK
	29	Housing Assy (3P, Blue)	VKP2045		59	Carriage Assy	VWT1110
	30	Tilt Spring	VBH1263		60	Cord Binder	ZCB - 069Z
				61	Screw	BBZ30P080FMC	



2.7 LOADING MECHANISM SECTION

Parts List

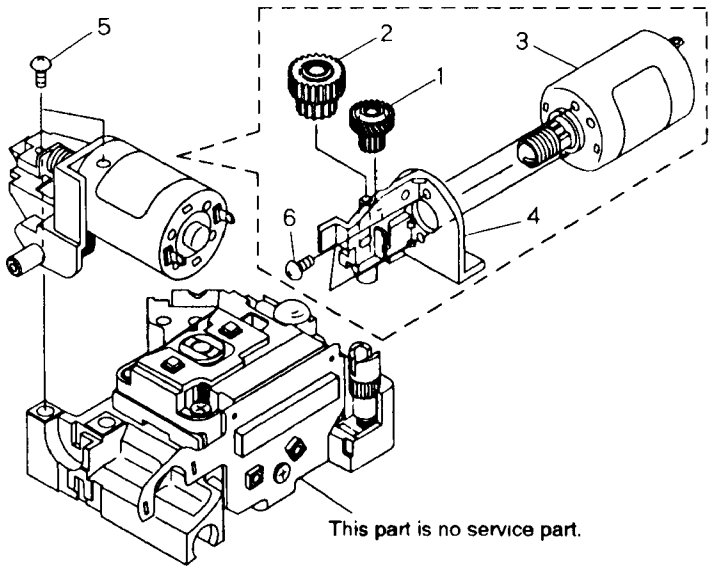
Mark	No.	Description	Part No.
	1	Clamp Cam	VNL1633
	2	CDP Spring	VBH1191
	3	Screw	Z39-019
	4	CD Plate	VNL1685
	5	Rubber Belt	VEB1184
	6	Gear Pulley	VNL1662
	7	Twin Gear	VNL1626
	8	Center Gear	VNL1660
	9	Mechanism Base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor Pulley	VNL1630
	13	Synchro Gear Assy	VXA2105
NSP	14	LMSB Assy	VWG1612
	15	Cam Holder	VNE2032
NSP	16	Carriage Motor	VXM1033
	17	Shaft Holder	VNE1942
	18	CAS Spring	VBH1190
	19	Cam Plate	VNL1631
	20	Cam Gear	VNL1625
	21	Loading Motor Assy	VXX2045
	22	MB - SW Lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double Gear	VNL1661
	26	Flexible Cable (12P)	VDA1485



2.8 CARRIAGE ASSY

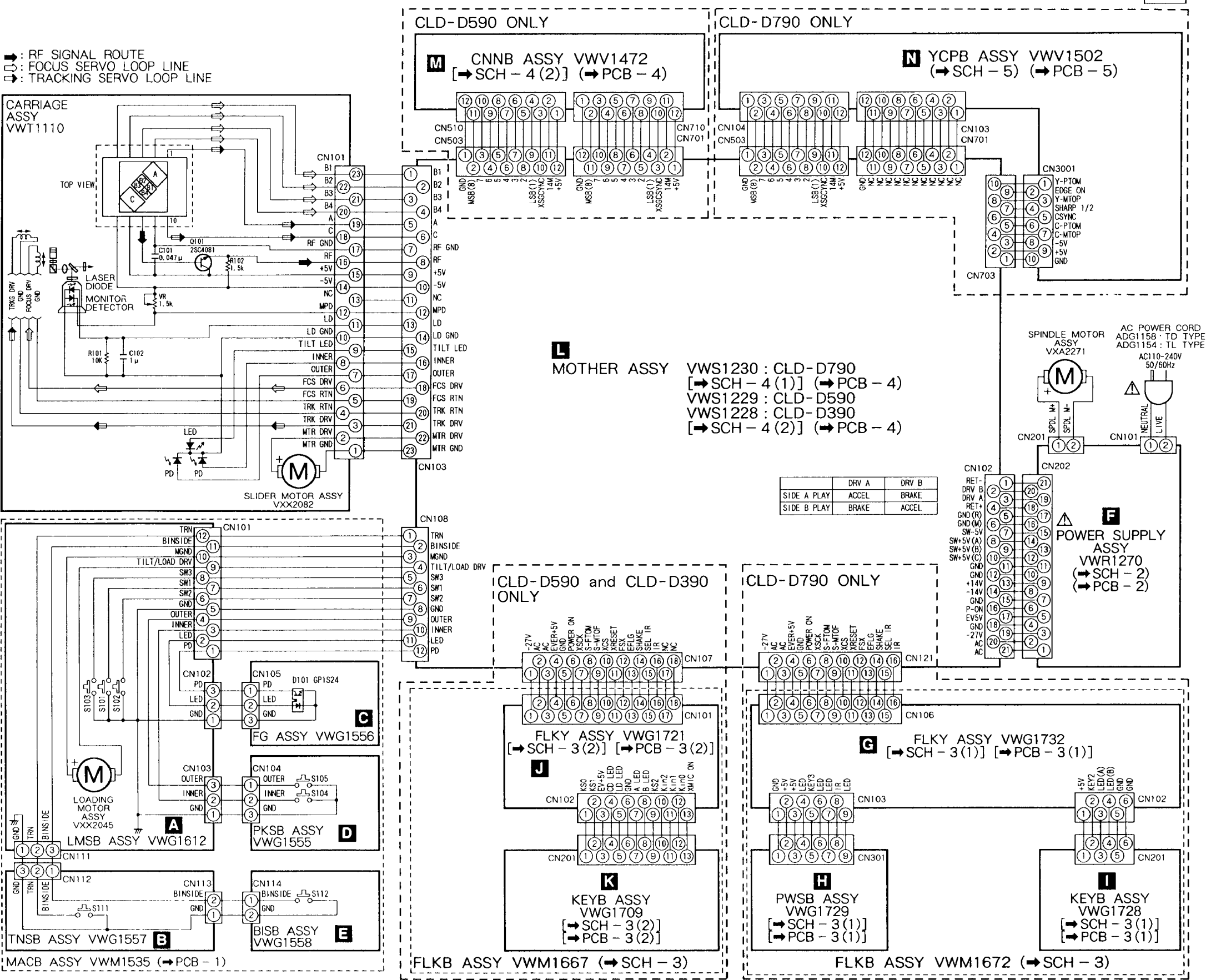
Parts List

Mark	No.	Description	Part No.
	1	CA Gear (A)	VNL1638
	2	CA Gear (B)	VNL1639
	3	Slider Motor Assy	VXX2082
	4	M Holder	VNL1700
	5	Screw	PBZ20P060FMC
	6	Screw	PMZ20P030FMC



3. SCHEMATIC DIAGRAMS

3.1 OVERALL CONNECTIONS, PKSB, FG, TNSB, BISB, LMSB AND CARRIAGE ASSEMBLIES



NOTE FOR SCHEMATIC DIAGRAM (Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: k: kΩ, M: MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

4. CAPACITORS:
Unit: p: pF or μ: μF unless otherwise noted.
Ratings: capacitor (μF) / voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:
Unit: m: mH or H: H unless otherwise noted.

6. VOLTAGE AND CURRENT:
□ or + V: DC voltage (V) in PLAY mode unless otherwise noted.
⇄ mA or ⇄ mA: DC current in PLAY mode unless otherwise noted.
Value in () is DC current in STOP mode.

7. OTHERS:
● or ○: Adjusting point.
◀: Measurement point.
The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH - □ ON THE SCHEMATIC DIAGRAM:
SCH - □ indicates the drawing number of the schematic diagram (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position).

LMSB ASSY
S101 : SW1
S102 : SW2
S103 : SW3

BISB ASSY
S112 : B INSIDE

PKSB ASSY
S104 : INNER
S105 : OUTER

TNSB ASSY
S111 : TURN

FLKY ASSY (CLD - D790)
S103 : OPEN/CLOSE(CD ▲)
S104 : OPEN/CLOSE(LD ▲)
S105 : STOP(■)
S106 : PLAY(▶)
S107 : PAUSE(⏏)

FLKY ASSY (CLD - D590 and D390)
S101 : POWER STANDBY/ON
S102 : QUICK TURN
S103 : DISPLAY OFF

KEYB ASSY (CLD - D790)
S201 : B
S202 : A
S203 : ▶▶▶▶
S204 : ◀◀◀◀

KEYB ASSY (CLD - D590 and D390)
S201 : ◀◀◀◀
S202 : ▶▶▶▶
S203 : A
S204 : B
S205 : OPEN/CLOSE(LD ▲)
S206 : PLAY(▶)
S207 : OPEN/CLOSE(CD ▲)
S208 : STOP(■)
S209 : PAUSE(⏏)

PWSB ASSY (CLD - D790)
S301 : PICTURE CONTROL
S302 : DISPLAY OFF
S303 : QUICK TURN
S304 : POWER STANDBY/ON

3.2 POWER SUPPLY ASSY

F Δ POWER SUPPLY ASSY (VWR1270)

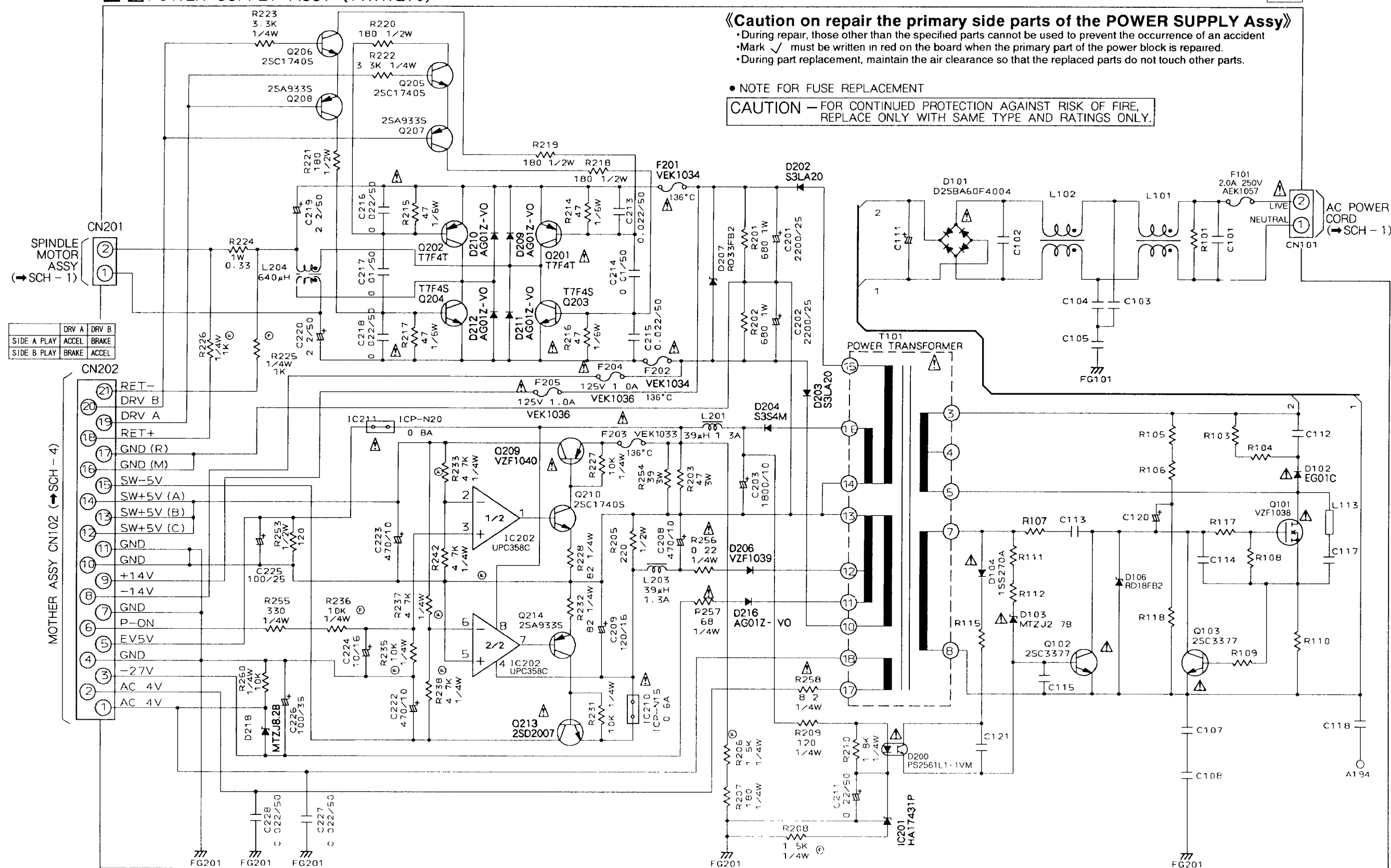
SCH-2

«Caution on repair the primary side parts of the POWER SUPPLY Assy»

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident
- Mark ✓ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

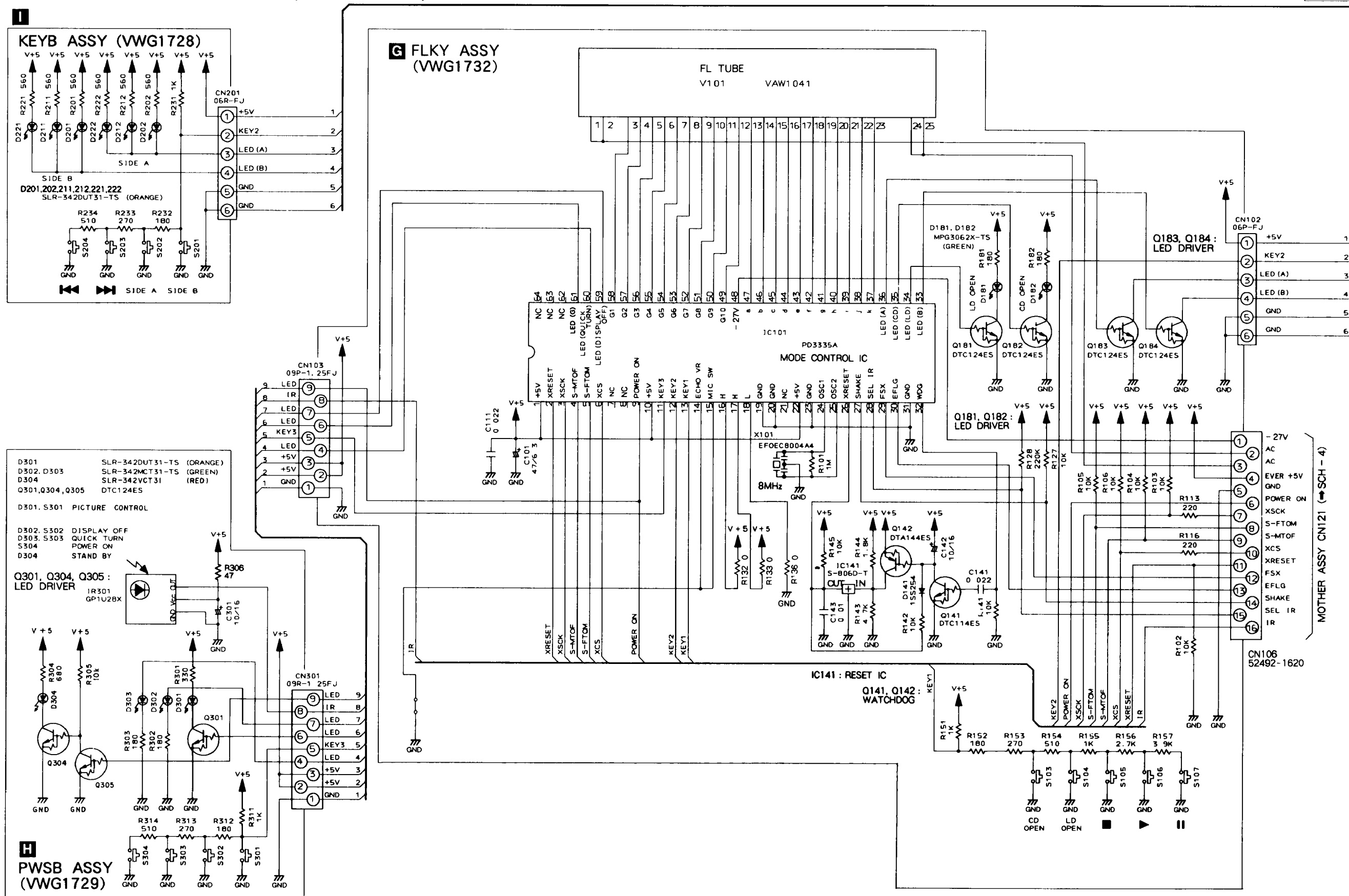
• NOTE FOR FUSE REPLACEMENT

CAUTION — FOR CONTINUED PROTECTION AGAINST RISK OF FIRE,
REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.



3.3 FLKY, KEYB AND PWSB ASSEMBLIES (FOR CLD- D790)

SCH - 3



CLD-D790

SCH-3 (1)

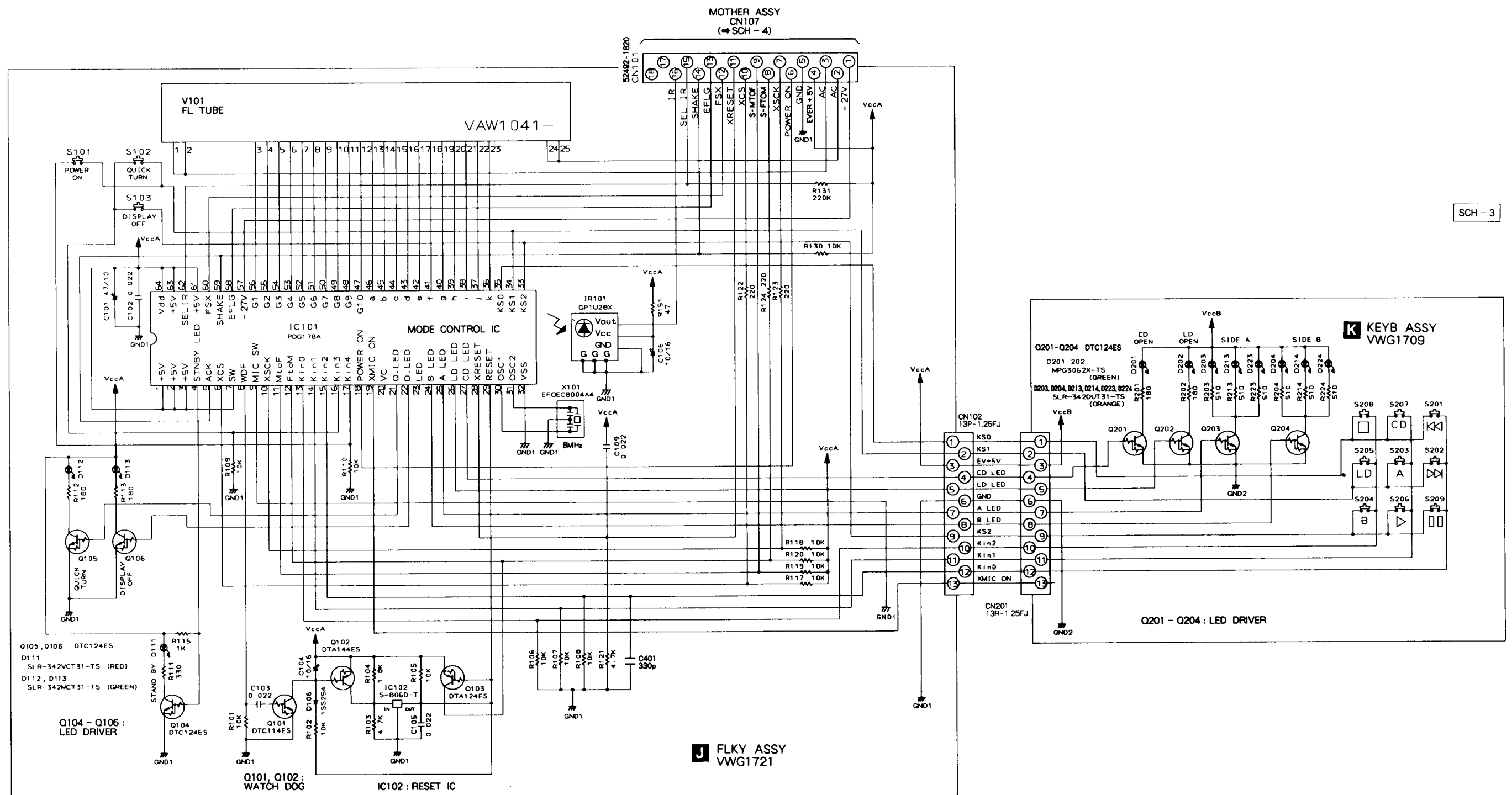
FLKY ASSY, KEYB ASSY,
PWSB ASSY

CLD-D790

SCH-3 (1)

FLKY ASSY, KEYB ASSY,
PWSB ASSY

3.4 FLKY AND KEYB ASSEMBLIES (FOR CLD- D590 AND CLD- D390)



**CLD - D590,
CLD - D390**

J K **SCH-3 (2)**

FLKY ASSY,
KEYB ASSY

**CLD-D590,
CLD-D390**

FLKY ASSY,
KEYB ASSY

SCH-3 (2)

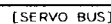
JK

3.5 MOTHER ASSY (FOR CLD- D790)

L MOTHER ASSY VWS1230



MOTHER ASSY



	DRV A	DRV B
SIDE A PLAY	ACCEL	BRAKE
SIDE B PLAY	BRAKE	ACCEL

➡: RF SIGNAL ROUTE

⇒: FOCUS SERVO LOOP LINE

➡: TRACKING SERVO LOOP LINE

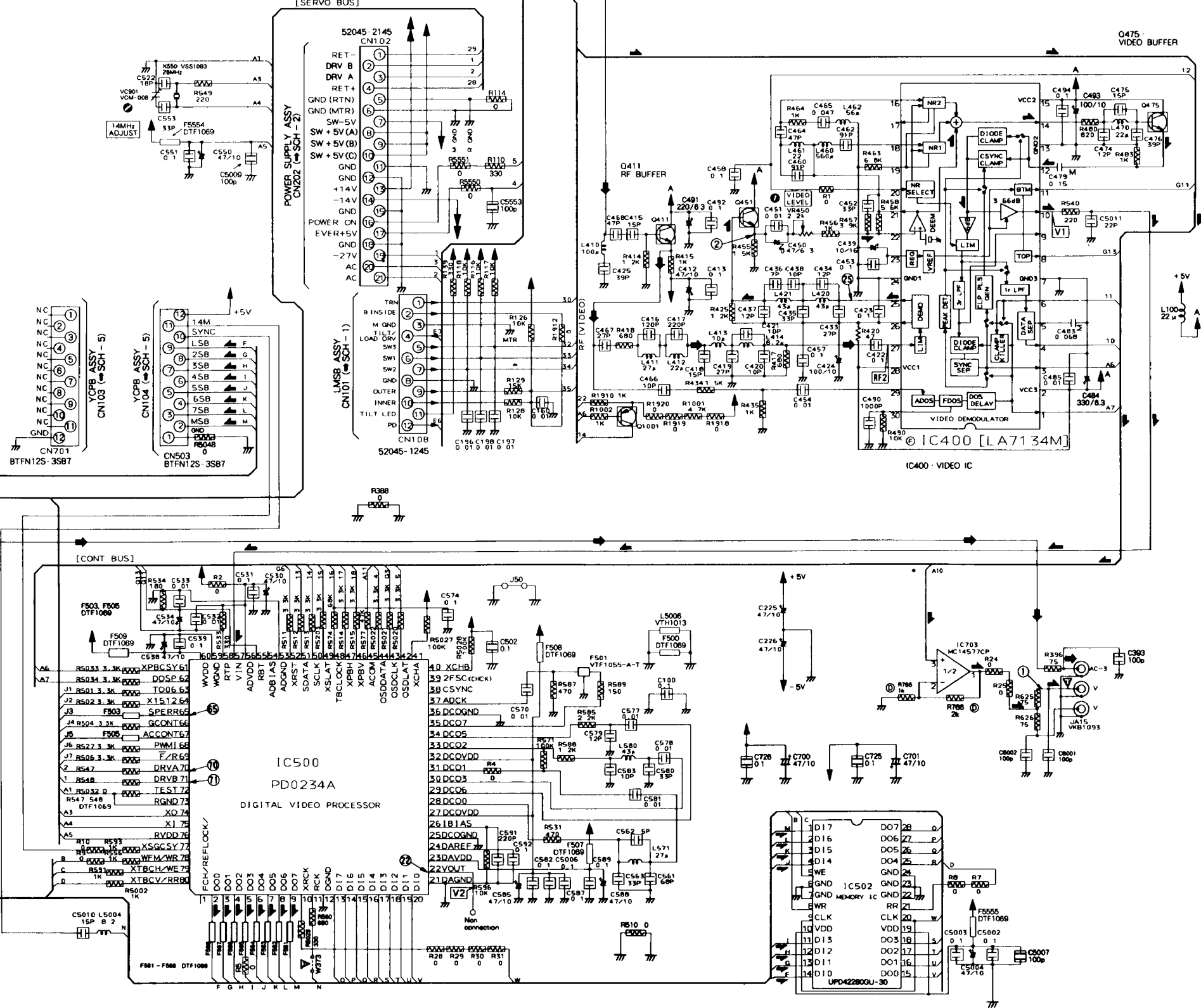
➤: AUDIO SIGNAL ROUTE

^(A)  AUDIO SIGNAL ROUTE (ANALOG)

VIDEO SIGNAL ROUTE

(M) Y SIGNAL ROUTE

(C)  C SIGNAL ROUTE



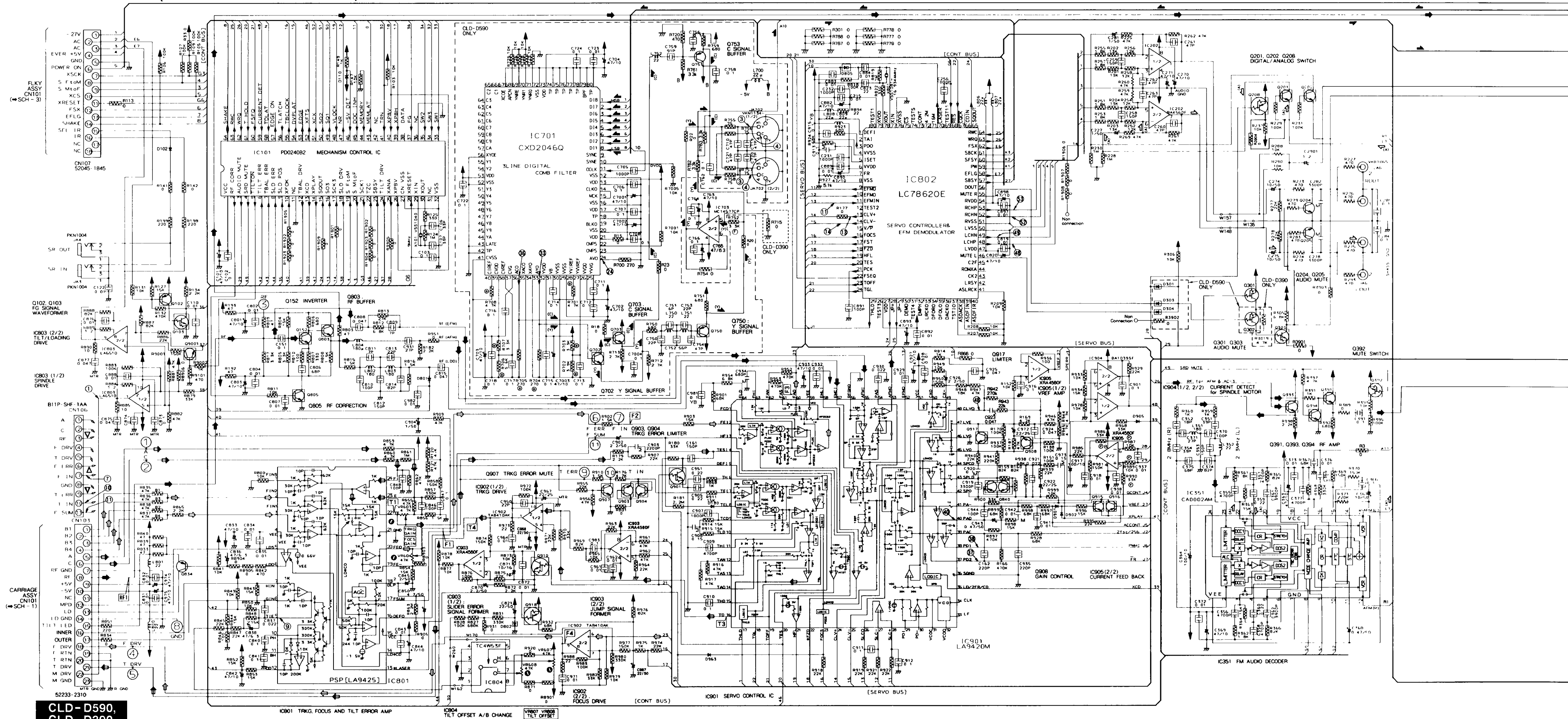
MOTHER ASSY

CLD - D790

SCH-4 (1)

3.6 MOTHER AND CNNB ASSEMBLIES (FOR CLD- D590 AND CLD- D390)

L MOTHER ASSY VWS1229 (CLD-D590)
MOTHER ASSY VWS1228 (CLD-D390)



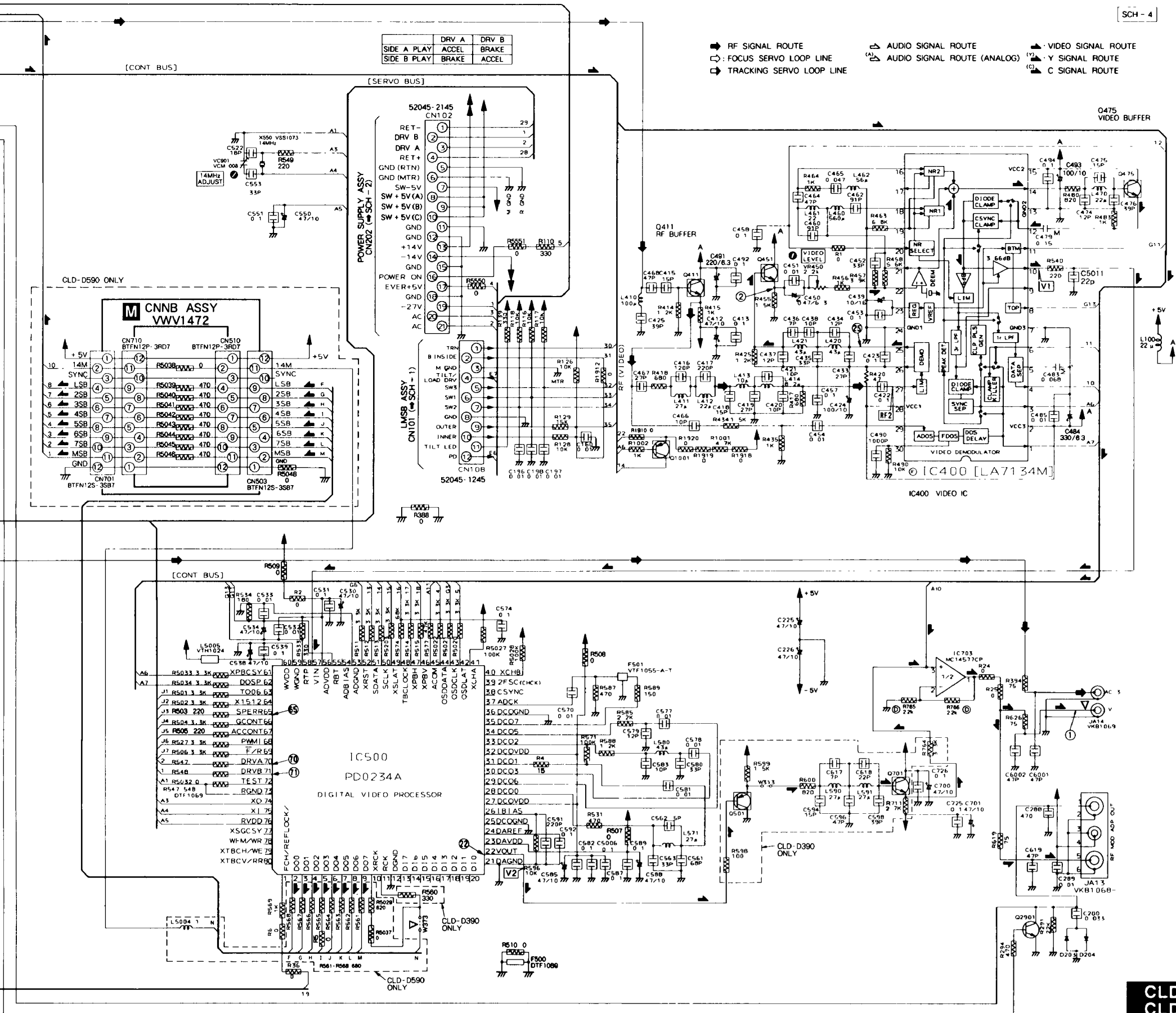
SCH - 4

D590

01001, 0102, 0750, 0753, 0916	2PB709A
0201, 0202, 0391, 0393, 0394	2PD601A
0451, 0475, 0702, 0703, 0805	
09001, 0903, 0904, 0907, 0908, 0915, 09172	
0834	25A854S
02901	25C1740S
0411, 0803	25C2412K
0152	25C3802K
0204, 0205	25D2144S
0208, 0301, 0302, 0392	DTA124EK
0103, 0303, 0901, 0910, 0918, 0840	DTC124EK
	FMV1A
0102, 0180, 0203, 0204, 0801, 0901, 0902, 0905, 0963	1SS254
0301, 0303, 0304, 0802, 0805	1SS355
0110	KV1851
	MT2J5 18

D390

01001, 0102, 0501, 0916	2PB709A
0201, 0202, 0391, 0393, 0394	2PD601A
0451, 0475, 0701, 0805, 09001, 0903, 0904, 0907, 0908, 0915, 09172	
0834	25A854S
02901	25C1740S
0411, 0803	25C2412K
0152	25C3802K
0204, 0205	25D2144S
0208, 0301, 0392	DTA124EK
0103, 0303, 0901, 0910, 0918, 0840, FMV1A	DTC124EK
0102, 0180, 0203, 0204, 0801, 0901, 0902, 0905, 0963	1SS254
0802	1SS355
0805	KV1851
0110	MT2J5 18



CLD - D590,
CLD - D390
SCH-4 (2)

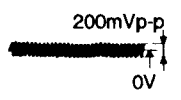
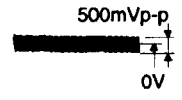
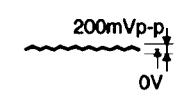
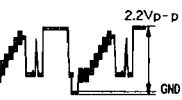
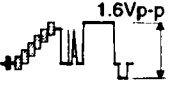
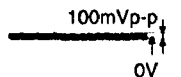
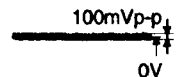
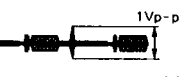
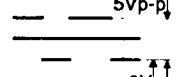
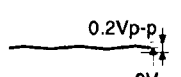
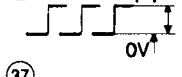
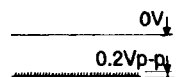
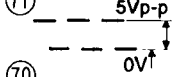
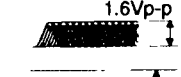
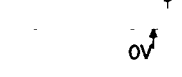
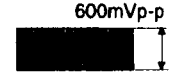
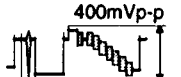
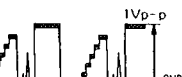
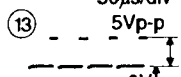
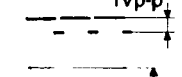
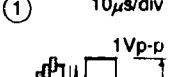
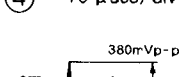
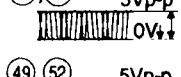
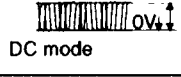
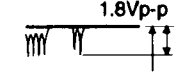
MOTHER ASSY,
CNNB ASSY

LM

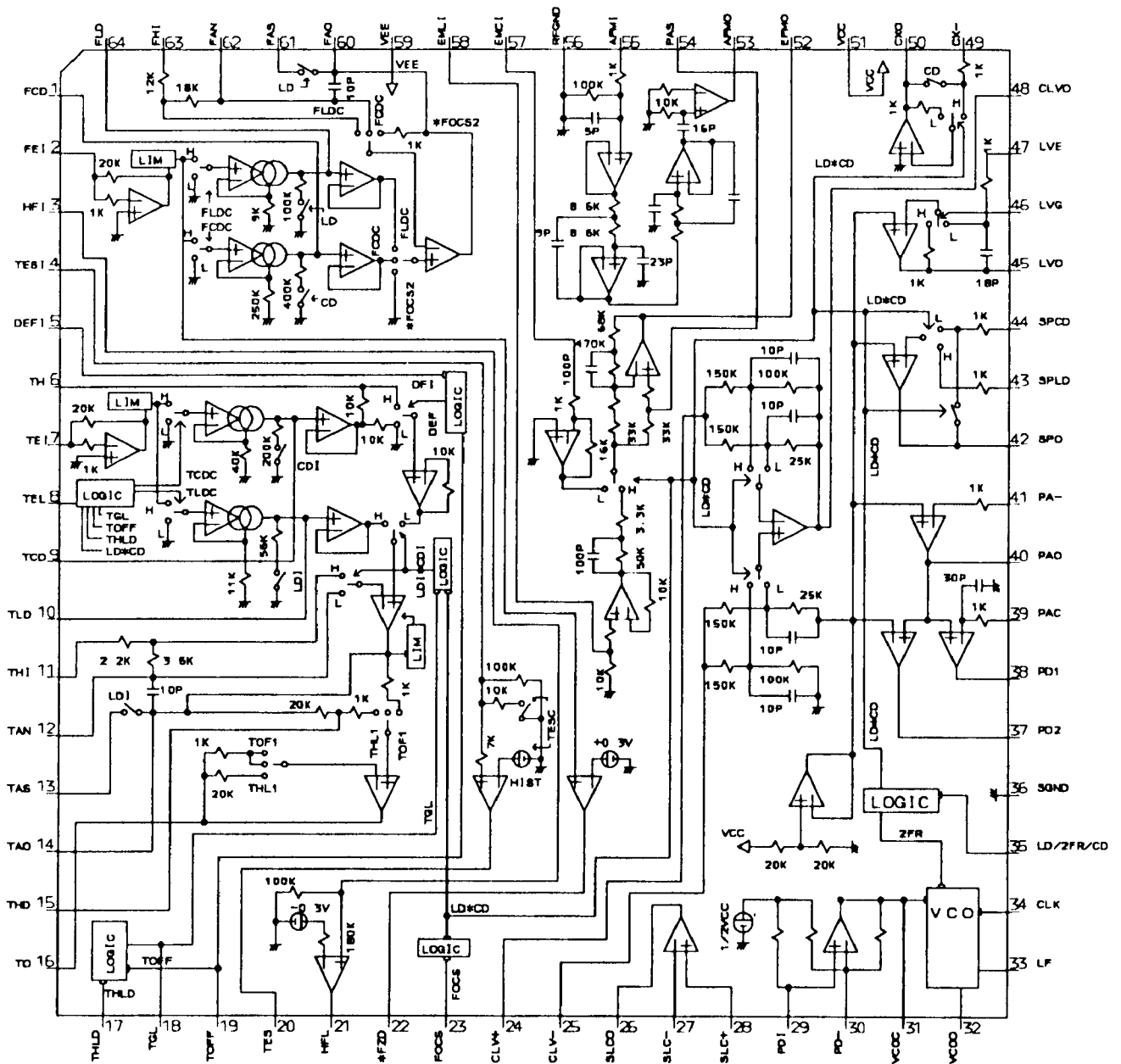
WAVEFORMS AND VOLTAGEMOTHER ASSY

Note : (No) in the table correspond to the pin number.

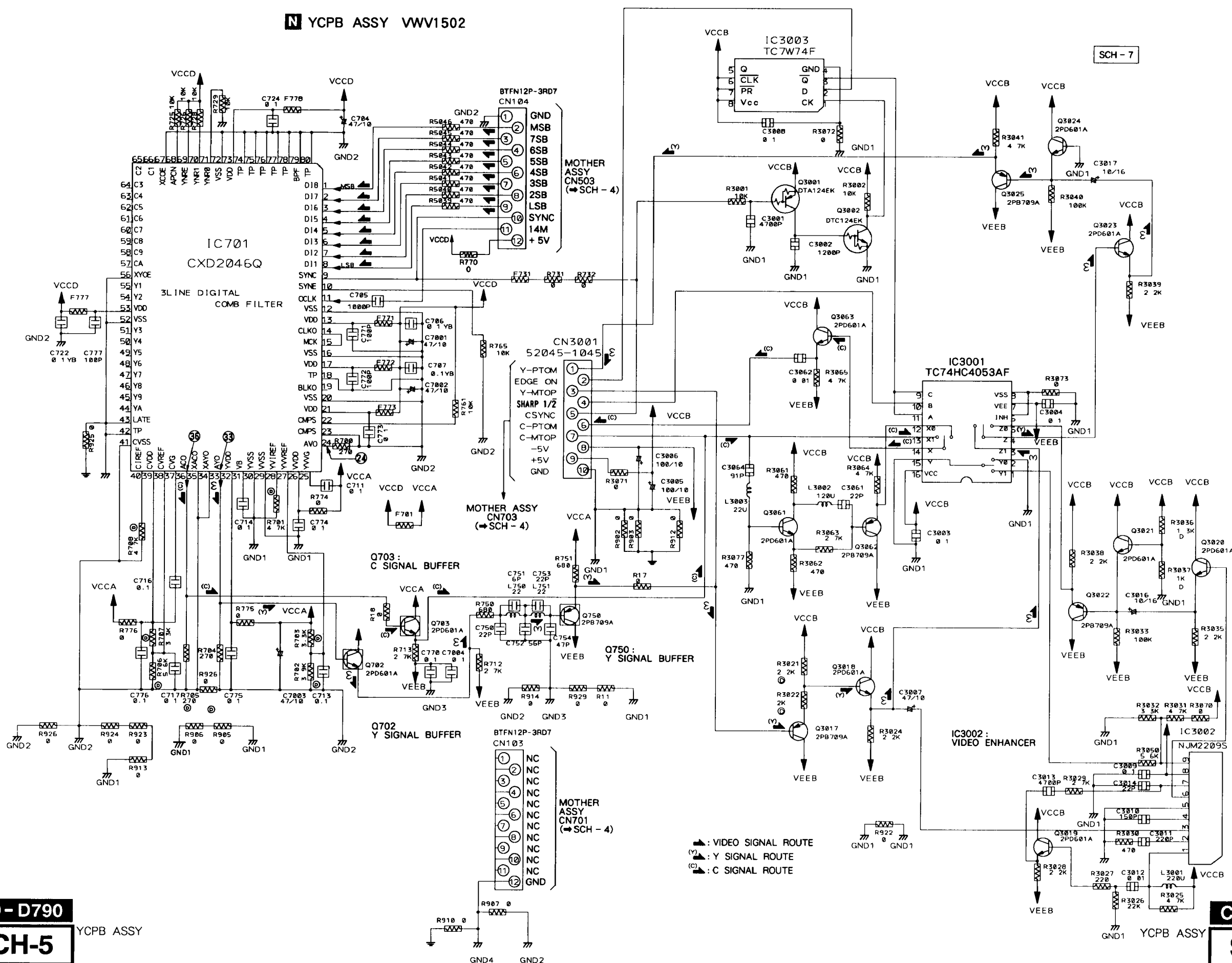
Measurement condition : In case when (D. audio) is written, at time when disc that has digital audio recording is played.

MOTHER ASSY					
IC801 (LA9425)	IC901 (LA9420M)	CN106	IC701 (CXD2046Q)	IC400 (LA7134M)	IC500 (PD0234A)
T1 (22) 5ms/div  DC mode	T3 (16) 5ms/div  DC mode	7 (F2) 5ms/div  DC mode	24 10 μsec/div  DC mode	V1 (10) 10μs/div  DC mode	V2 (22) 10μs/div  DC mode
F1 (20) 5ms/div  DC mode	F3 (60) 5ms/div  DC mode	10 5ms/div  DC mode	36 10 μsec/div  DC mode	RF2 (27) 2ms/div  AC mode	65 5ms/div  DC mode
9 10ms/div  DC mode	38 10μs/div  DC mode	11 5ms/div  DC mode	33 10 μsec/div  DC mode	25 10μs/div  DC mode	71 10μs/div  DC mode
IC802 (LC78620E) 11 0.5μs/div  DC mode	40 10ms/div  DC mode	CN103 RF1 (8) 2ms/div  AC mode		Q451 Emitter 2 10μs/div  AC mode	JA702 YOUT 3 10 μsec/div  (75 Ω termination) DC mode
13 50μs/div  DC mode	48 50μs/div  DC mode			JA15 VIDEO OUT 1 10μs/div  (75Ω termination) 0V DC mode	JA702 COUT 4 10 μsec/div  (75 Ω termination) DC mode
48, 53 0.2μs/div  DC mode	T4 (1) 5ms/div  DC mode				
49, 52 5Vp-p  DC mode					
IC803 (LA6510) 1 2ms/div  DC mode	F4 (9) 5ms/div  DC mode				

● The Inside Block Diagram of IC901 (LA9420M)

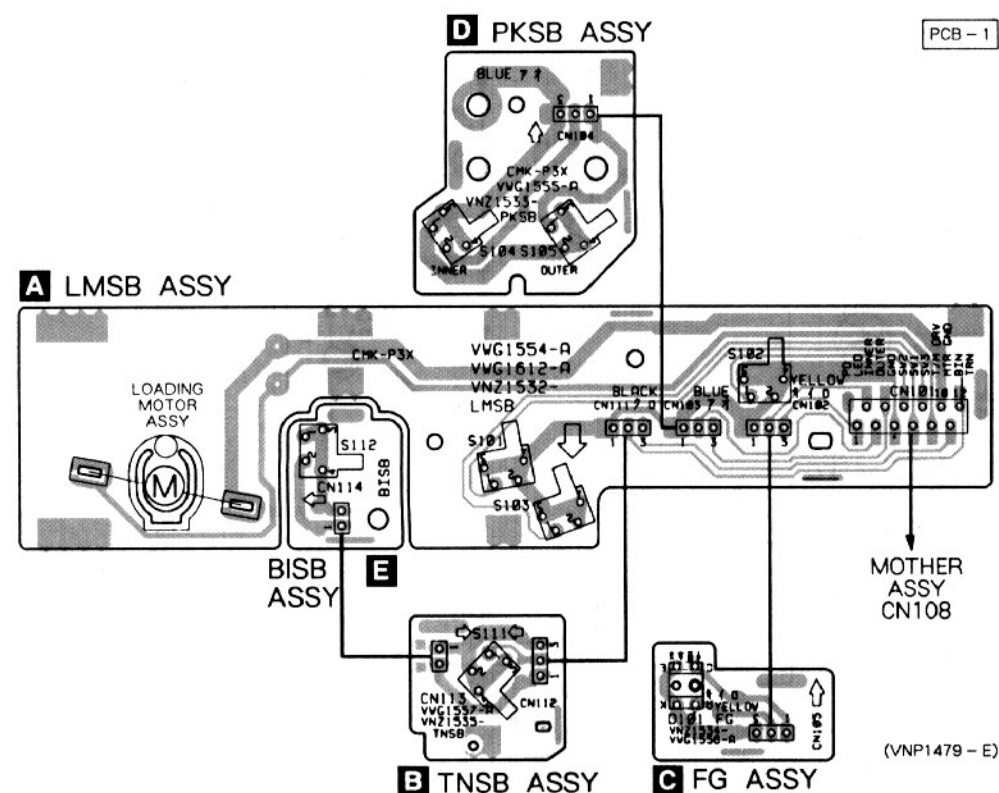


3.7 YCPB ASSY (CLD- D790 ONLY)



4.1 PKSB, FG, TNSB, BISB AND LMSB ASSEMBLIES

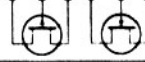
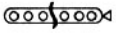
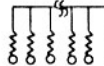
4.1 PKSB, FG, TNSB, BISB AND LMSB ASSEMBLIES



● This diagram is viewed from the mounted parts side.

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

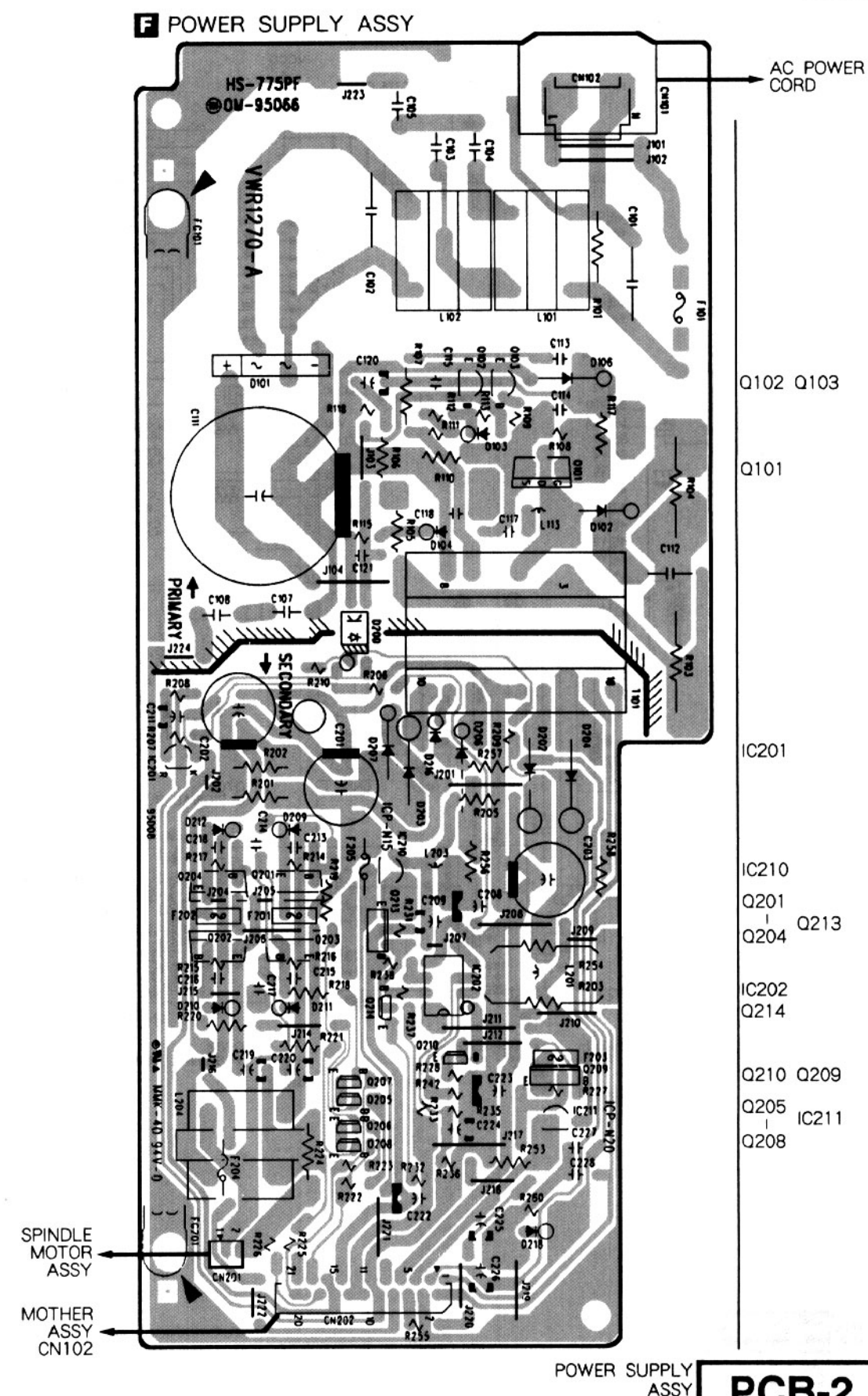
A	B	C
D	E	

PCB-1

PKSB ASSY, FG ASSY, TNSB ASSY,
BISB ASSY, LMSB ASSY

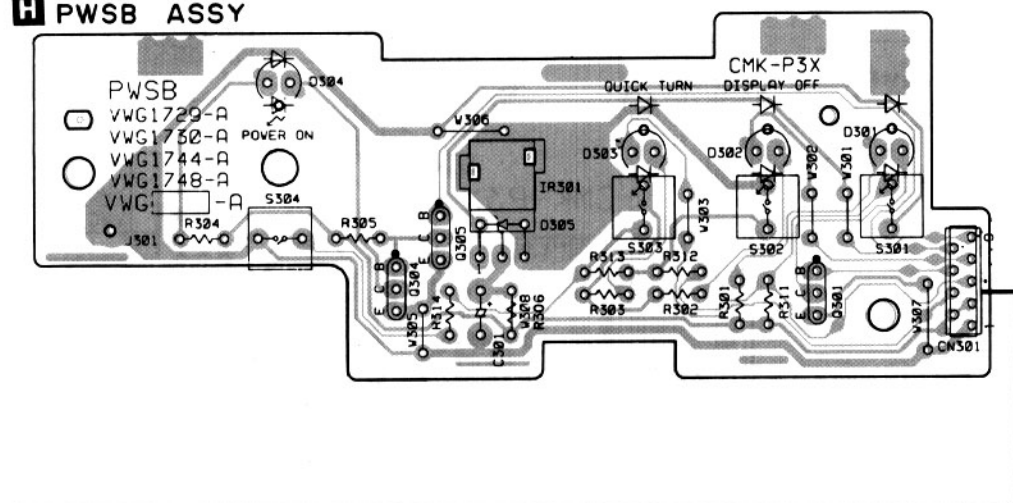
40

4.2 POWER SUPPLY ASSY



● This diagram is viewed from the mounted parts side.

H PWSB ASSY



- The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

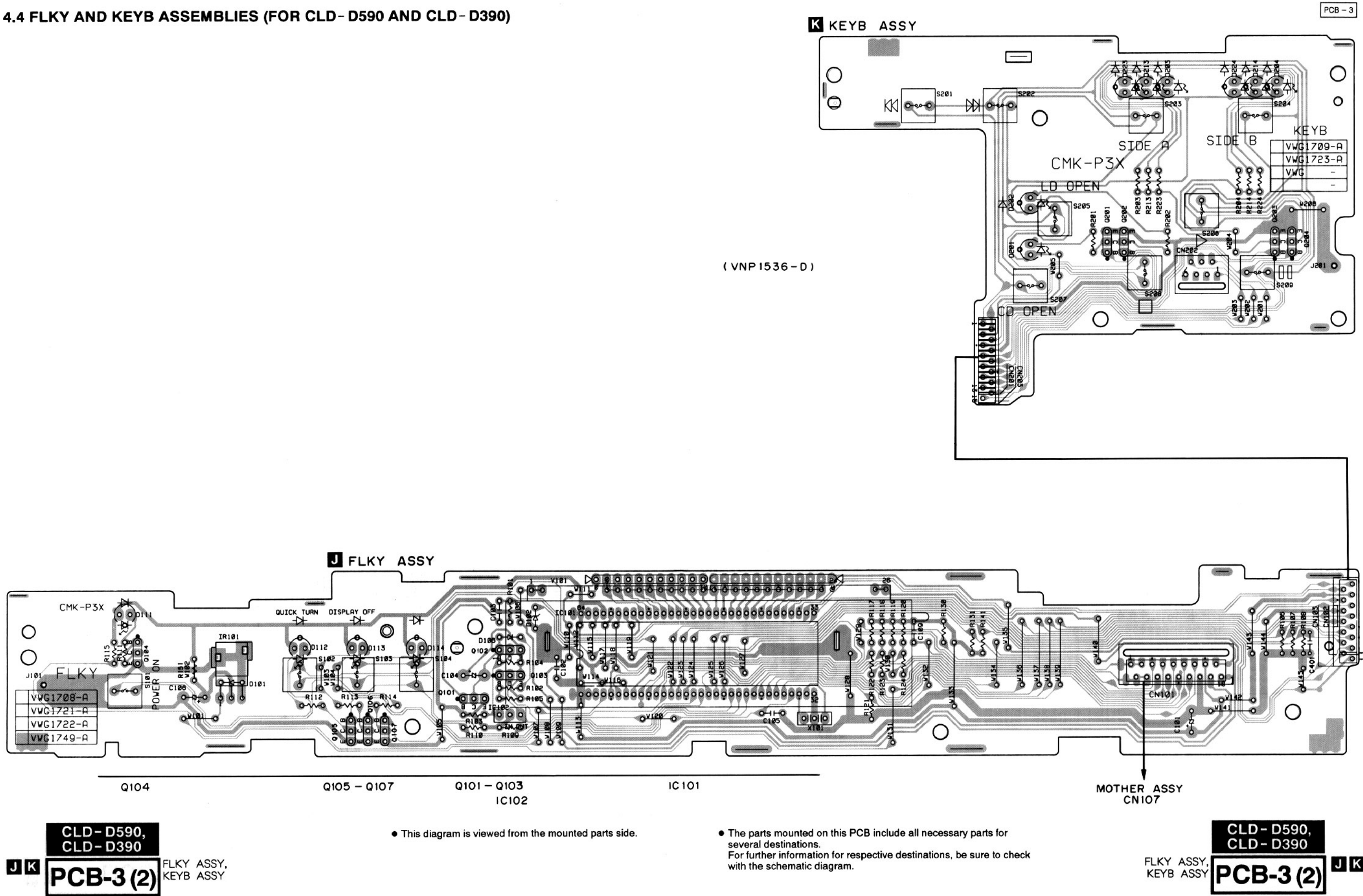
GH
I **PCB-3 (1)**

FLKY ASSY, KEYB ASSY,
PWSB ASSY

FLKY ASSY, KEYB ASSY,
PWSB ASSY

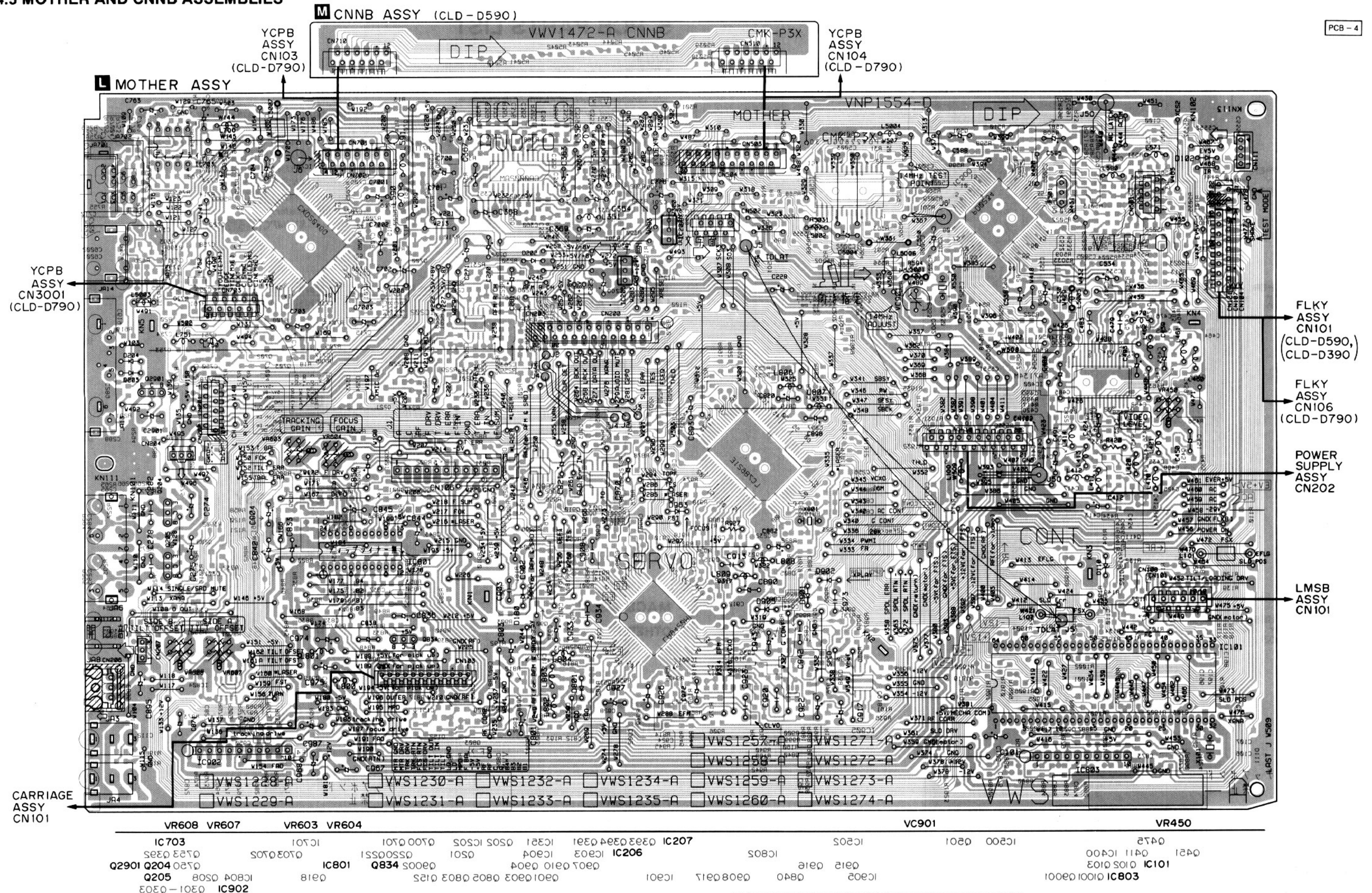
PCB-3 (1)

4.4 FLKY AND KEYB ASSEMBLIES (FOR CLD - D590 AND CLD - D390)



4.5 MOTHER AND CNNB ASSEMBLIES

PCB-4



• This diagram is viewed from the mounted parts side.

• The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

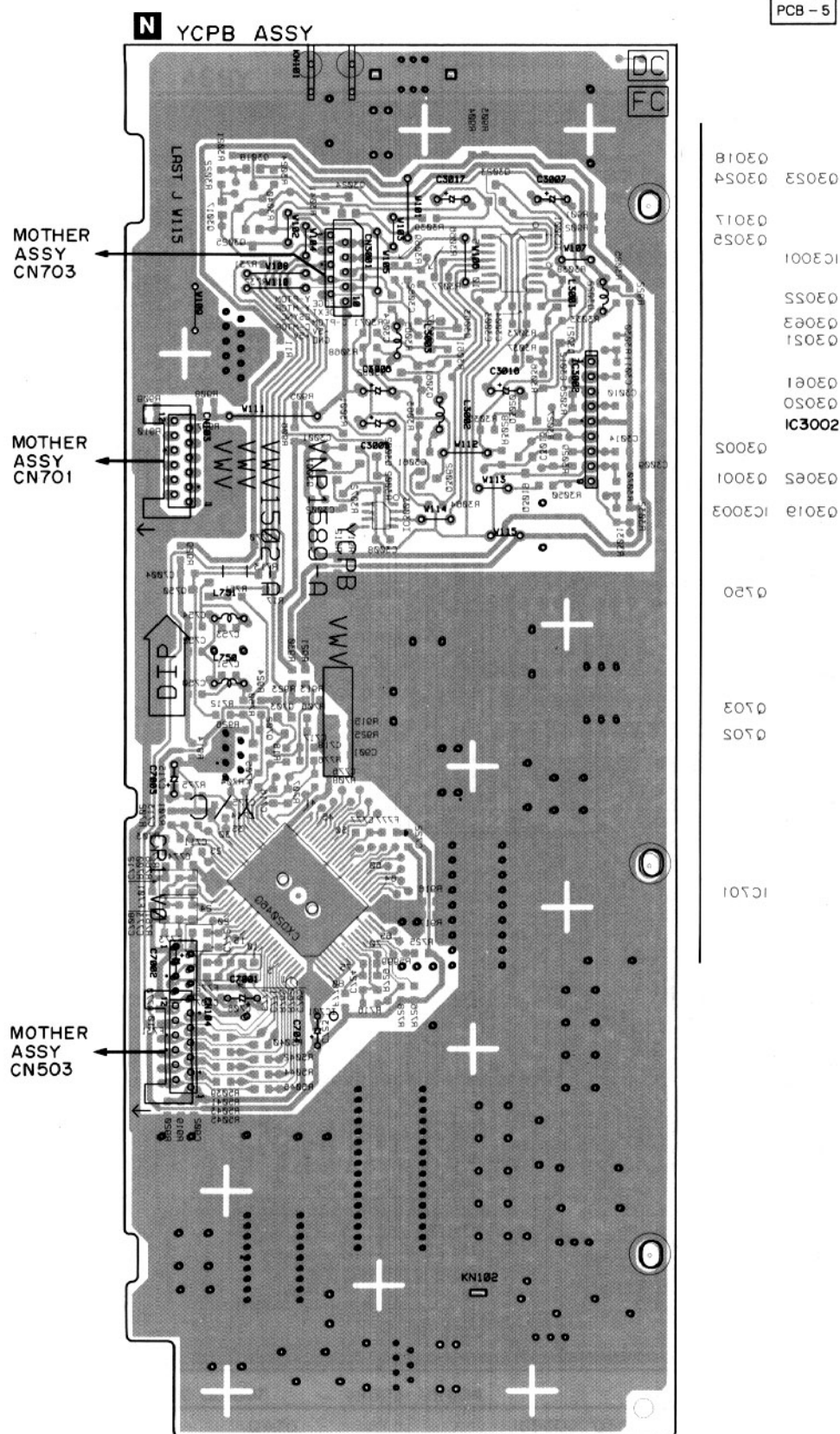
MOTHER ASSY,
CNNB ASSY

LM PCB-4

PCB-4 LM

CLD - D790, CLD - D590, CLD - D390

4.6 YCPB ASSY (CLD- D790 ONLY)



CLD - D790

PCB-5

YCPB ASSY

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

5. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex 1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω $\rightarrow$ $56 \times 10^1 \rightarrow 561$ RD1/4PU 561J

47k Ω $\rightarrow$ $47 \times 10^1 \rightarrow 473$ RD1/4PU 473J

0.5 Ω $\rightarrow$ 0R5 RN2H 0R5K

1 Ω $\rightarrow$ 1R0 RS1P 1R0K

Ex 2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω $\rightarrow$ $562 \times 10^1 \rightarrow 5621$ RN1/4PC 5621F

■ FOR CLD- D790

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
LIST OF ASSEMBLIES				TNSB ASSY			
NSP	MACB ASSY		VWM1535	SWITCH			
NSP	└ PKSB ASSY		VWG1555		S111		DSG1017
NSP	└ FG ASSY		VWG1556	BISB ASSY			
NSP	└ TNSB ASSY		VWG1557	SWITCH			
NSP	└ BISB ASSY		VWG1558		S112		DSG1017
NSP	└ LMSB ASSY		VWG1612	LMSB ASSY			
Δ	POWER SUPPLY ASSY		VWR1270	SWITCHES			
NSP	FLKB ASSY		VWM1672		S101-S103		DSG1017
NSP	└ FLKY ASSY		VWG1732	OTHERS			
NSP	└ KEYB ASSY		VWG1728		CN101 12P FFC CONNECTOR		52044-1245
NSP	└ PWSB ASSY		VWG1729	POWER SUPPLY ASSY			
NSP	MOTHER ASSY		VWM1647	SEMICONDUCTORS			
	└ MOTHER ASSY		VWS1230		IC201		HA17431P
	YCPB ASSY		VWV1502	Δ	IC210		ICP-N15
				Δ	IC211		ICP-N20
					IC202		UPC358C
					Q207, Q208, Q214		2SA933S
					Q205, Q206, Q210		2SC1740S
				Δ	Q102, Q103		2SC3377
				Δ	Q213		2SD2007
				Δ	Q203		T7F4S
					Q204		T7F4S
				Δ	Q201		T7F4T
					Q202		T7F4T
				Δ	Q101		VZF1038
				Δ	Q209		VZF1040
					D206		VZF1039

MACB ASSY

OTHERS	
PC Board MACB	VNP1479

PKSB ASSY

SWITCHES	
S104, S105	DSG1017

FG ASSY

SEMICONDUCTOR	
D101	GP1S24

Mark	No.	Description	Part No.
△	D104		ISS270A
	D209-D212, D216		AG01Z-VO
△	D101		D2SB60F4004
△	D102		EG01C
△	D103		MTZJ2. 7B
	D218		MTZJ8. 2B
△	D200		PS2561L1-1VM
△	D106		RD18FB2
	D207		RD33FB2
	D202, D203		S3LA20
	D204		S3S4M

RESISTORS

△	R257	(68Ω, 1/4W)	VCN1048
△	R258	(8.2Ω, 1/4W)	VCN1050
△	R256	(0.22Ω, 1/2W)	VCN1055

OTHERS

△	F101	FUSE(T2A/250V)	AEK1057
△	F203	FUSE(136°C)	VEK1033
△	F201, F202	FUSE(136°C)	VEK1034
△	F204, F205	FUSE(1A/125V)	VEK1036

FLKB ASSY**OTHERS**

PC Board FLKB	VNP1557
---------------	---------

FLKY ASSY**SEMICONDUCTORS**

IC101	PD3335A
IC141	S-806D
Q142	DTA144ES
Q141	DTC114ES
Q181-Q184	DTC124ES
D141	ISS254
D181, D182	MPG3062X

SWITCHES

S103-S107	ASG1034
-----------	---------

CAPACITORS

C142	CEAL100M16
C101	CEAL470M6R3
C111, C141	CKPUYF223Z25
C143	CKPUYY103M16

RESISTORS

All Resistors	RD1/4PU□□□J
---------------	-------------

OTHERS

CN102	FJ CONNECTOR 6P	06P-FJ
CN103	1.25FJ CONNECTOR	09P-1.25FJ
CN106	FPC BOTTOM CONNECTOR 16P	52492-1620
X101	CERAMIC RESONATOR(8MHz)	EFOEC8004A4
V101	FL TUBE	VAW1041
	SPACER	VEC1599
	FL HOLDER	VNF1087

Mark	No.	Description	Part No.
------	-----	-------------	----------

KEYB ASSY**SEMICONDUCTORS**

D201, D202, D211, D212	SLR-342DUT31
D221, D222	SLR-342DUT31

SWITCHES

S201-S204	ASG1034
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RESISTORS

All Resistors	RD1/4PU□□□J
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OTHERS

CN201 FJ CONNECTOR 6P	06R-FJ
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PWSB ASSY**SEMICONDUCTORS**

Q301, Q304, Q305	DTC124ES
D301	SLR-342DUT31
D302, D303	SLR-342MCT31
D304	SLR-342VCT31

SWITCHES

S301-S304	ASG1034
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CAPACITOR

C301	CEJA100M16
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RESISTORS

All Resistors	RD1/4PU□□□J
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OTHERS

CN301 1.25FJ CONNECTOR	09R-1.25FJ
IR301 REMOTE RECEIVER UNIT	GPIU28X

MOTHER ASSY(VWM1647)**OTHERS**

PC Board MOTHER	VNP1554
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MOTHER ASSY(VWS1230)**SEMICONDUCTORS**

IC904	BA10393F
IC351	CA0002AM
IC803	LA6510
IC400	LA7134M
IC901	LA9420M
IC801	LA9425
IC802	LC78620E
IC703	MC14577CP
IC500	PD0234A
IC101	PD0240B2
IC902	TA8410AK
IC804	TC4W53F
IC502	UPD42280GU-30
IC202, IC903, IC905	XRA4560F
Q1001, Q102, Q753, Q916	2PB709A

CLD - D790, CLD - D590, CLD - D390

Mark	No.	Description	Part No.
	Q201, Q202, Q391, Q393, Q394		2PD601A
	Q451, Q475, Q805, Q9001		2PD601A
	Q903, Q904, Q907, Q908, Q915		2PD601A
	Q917		2PD601A
	Q834		2SA854S
	Q411, Q803		2SC2412K
	Q152		2SC3802K
	Q204, Q205		2SD2144S
	Q208, Q301, Q302, Q392		DTA124EK
	Q103, Q303, Q901, Q910, Q918		DTC124EK
	Q840		FMY1A
	D102, D180, D801, D901, D902		1SS254
	D905, D963		1SS254
	D301, D303, D304, D802		1SS355
	D805		KV1851
	D110		MTZJ5. 1B

COILS AND FILTERS

F113, F198, F199, F500, F503	DTF1069
F505, F507-F509, F547, F548	DTF1069
F5553-F5555, F561-F568	DTF1069
L413	LAU100J
L410	LAU101J
L351, L802-L804	LAU181J
L100, L352, L412, L461, L470	LAU220J
L700, L800, L801, L806-L809	LAU220J
L411, L571	LAU270J
L420, L421, L580	LAU430J
L462	LAU560J
L414, L5004	LAU8R2J
L460	LFA561J
F501	VTF1055
L5006	VTH1013

CAPACITORS

C562	CCSQCH050C50
C436, C309, C811	CCSQCH070D50
C420, C421, C438, C466, C583	CCSQCH100D50
C111, C112, C202, C370, C393	CCSQCH101J50
C5007, C5009, C5550-C5554	CCSQCH101J50
C6001, C6002, C710, C719-C721	CCSQCH101J50
C810, C846, C848, C891, C944	CCSQCH101J50
C434, C437, C474, C579	CCSQCH120J50
C416	CCSQCH121J50
C415, C418, C475, C5010	CCSQCH150J50
C161, C258, C259, C353, C812	CCSQCH151J50
C352, C552	CCSQCH180J50
C5011, C813, C823, C950	CCSQCH220J50
C162, C417, C591, C935	CCSQCH221J50
C371, C419, C433, C467, C931	CCSQCH270J50
C106, C107, C354, C435, C452	CCSQCH330J50
C553, C563, C580	CCSQCH330J50
C351, C425, C476	CCSQCH390J50
C260-C263, C464, C468	CCSQCH470J50
C375, C561, C806	CCSQCH680J50
C374, C814	CCSQCH820J50
C460, C462	CCSQCH910J50
C439	CEAL100M16
C895	CEAL101M6R3
C588, C763, C844	CEAL470M10

Mark	No.	Description	Part No.
	C363, C412, C765, C836		CEAL470M6R3
	C838		CEALNP470M6R3
	C972		CEANP220M10
	C450		CEANP470M6R3
	C227, C281, C904		CEAS010M50
	C274, C275, C367		CEAS100M50
	C364, C424, C493, C917		CEAS101M10
	C821, C922, C967		CEAS220M25
	C845, C870, C902, C926		CEAS2R2M50
	C101, C225, C226, C270, C271		CEAS470M10
	C369, C5004, C530, C534, C538		CEAS470M10
	C550, C585, C700, C701, C801		CEAS470M10
	C803, C820, C833, C842, C882		CEAS470M10
	C890, C893, C898, C927, C933		CEAS470M10
	C974, C975		CEAS470M10
	C368, C943		CEASR47M50
	C968, C987		CEHAQ220M50
	C491		CEJA221M6R3
	C484		CEJA331M6R3
	C850		CEJA4R7M35
	C256, C490, C907		CKSQYB102K50
	C5002, C5003, C551, C915, C981		CKSQYB104K25
	C919		CKSQYB332K50
	C361, C362		CKSQYB392K50
	C355-C358, C377, C909		CKSQYB472K50
	C110, C122, C160, C196-C198		CKSQYF103Z50
	C372, C373, C376, C451, C454		CKSQYF103Z50
	C532, C533, C570, C577, C578		CKSQYF103Z50
	C581, C802, C804, C807, C819		CKSQYF103Z50
	C822, C831, C832, C834, C835		CKSQYF103Z50
	C843, C876, C883, C884		CKSQYF103Z50
	C888, C889, C892, C896, C897		CKSQYF103Z50
	C918, C928, C929, C932		CKSQYF103Z50
	C937, C938, C941, C961, C962		CKSQYF103Z50
	C964, C971, C982		CKSQYF103Z50
	C100, C102, C103, C151		CKSQYF104Z25
	C284, C285, C365, C366, C391		CKSQYF104Z25
	C413, C422, C423, C453		CKSQYF104Z25
	C457, C458, C485, C492, C494		CKSQYF104Z25
	C500, C5006, C501, C502, C531		CKSQYF104Z25
	C539, C574, C582, C587, C589		CKSQYF104Z25
	C592, C725, C726, C756, C758		CKSQYF104Z25
	C762, C764, C766, C827, C828		CKSQYF104Z25
	C840, C841, C847, C872-C874		CKSQYF104Z25
	C901, C910-C912, C976, C983		CKSQYF104Z25
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C465, C808, C815, C875, C877		CKSQYF473Z25
	C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C913, C920		CQMA104J50
	C479, C908, C973		CQMA154J50
	C903		CQMA222J50
	C278, C282		CQMA332J50
	C923		CQMA473J50
	C934		CQMA681J50
	C483		CQMA683J50
	C871 (10 μ F/16V NP)		VCH1152
	VC901 (20pF)		VCM-008

Mark	No.	Description	Part No.
RESISTORS			
	R420		RD1/4PU470J
	R762, R765		RN1/10SE102D
	R490, R987, R989		RN1/10SE103D
	R880, R883		RN1/10SE104D
	R763, R766		RN1/10SE202D
	R753, R754		RN1/10SE222D
	R752		RN1/10SE332D
	R879, R986, R990		RN1/10SE333D
	R259-R262, R881, R882		RN1/10SE473D
	R927		RN1/6PQ5101F
	VR450	(2.2k Ω)	PCP1025
	VR603	(4.7k Ω)	RCP1020
	VR604, VR607, VR608	(47k Ω)	RCP1047
	Other Resistors		RS1/10S□□□J

OTHERS

CN703	10P FFC CONNECTOR	52045-1045
CN108	12P FFC CONNECTOR	52045-1245
CN121	16P FFC CONNECTOR	52045-1645
CN102	21P FFC CONNECTOR	52045-2145
CN103	23P FFC CONNECTOR	52233-2310
CN106	11P TOP POST	B11P-SHF-1AA
CN503, CN701	B TO B CONNECTOR 12P	BTFN12S-3SB7
J50	BOARD IN JUMPER	DB912NS0
JA8	OPTICAL SENSOR MODULE	GPIF32T
JA3, JA4	REMOTE CONTROL JACK	PKN1004
	PCB BINDER	VEF1040
JA6	4P PIN JACK	VKB1065
JA15	3P PIN JACK	VKB1093
JA702	S TERMINAL (8P)	VKN1134
	SCREW TERMINAL	VNE1948
	EARTH METAL	VNF1084
X101	CERAMIC RESONATOR (9.00MHz)	VSS1040
X801	CRYSTAL RESONATOR (16MHz)	VSS1081
X550	CRYSTAL RESONATOR (28.636MHz)	VSS1093

Mark	No.	Description	Part No.
YCPB ASSY			
SEMICONDUCTORS			
	IC701		CXD2046Q
	IC3002		NJM2209S
	IC3001		TC74HC4053AF
	IC3003		TC7W74F
	Q3017, Q3022, Q3025, Q3062, Q750		2PB709A
	Q3018-Q3021, Q3023, Q3024, Q3061		2PD601A
	Q3063, Q702, Q703		2PD601A
	Q3001		DTA124EK
	Q3002		DTC124EK

COILS AND FILTERS

F701, F731, F771-F773	DTF1069
F777, F778	DTF1069
L3002	LFA121J
L3003, L750, L751	LFA220J
L3001	LFA221J

CAPACITORS

C751	CCSQCH060D50
C771, C772, C777	CCSQCH101J50
C3010	CCSQCH151J50
C3014, C3061, C750, C753	CCSQCH220J50
C3011	CCSQCH221J50
C754	CCSQCH470J50
C752	CCSQCH560J50
C3064	CCSQCH910J50
C3016, C3017	CEAS100M16
C3005, C3006	CEAS101M10
C3007, C7001-C7003, C704	CEAS470M10
C705	CKSQYB102K50
C706, C707, C722	CKSQYB104K25
C3002	CKSQYB122K50
C3001, C3013	CKSQYB472K50
C3012, C3062	CKSQYF103Z50
C3003, C3004, C3008, C3009, C7004	CKSQYF104Z25
C711, C713, C714, C716, C717	CKSQYF104Z25
C724, C770, C773-C776	CKSQYF104Z25

RESISTORS

R3037	RN1/10SE102D
R3036	RN1/10SE132D
R3022	RN1/10SE202D
R3021	RN1/10SE222D
R704, R705	RN1/10SE271D
R703, R707	RN1/10SE332D
R702	RN1/10SE392D
R701, R708	RN1/10SE472D
R706	RN1/10SE562D
Other Resistors	RS1/10S□□□J

OTHERS

CN3001	10P FFC CONNECTOR	52045-1045
CN103, CN104	B TO B CONNECTOR 12P	BTFN12P-3RD7
	SCREW TERMINAL	VNE1948
	PC Board YCPB	VNP1589

CLD - D790, CLD - D590, CLD - D390

Mark	No.	Description	Part No.
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■ FOR CLD - D590 AND CLD - D390

LIST OF ASSEMBLIES

NSP	MACB ASSY	VWM1535
NSP	PKSB ASSY	VWG1555
NSP	FG ASSY	VWG1556
NSP	TNSB ASSY	VWG1557
NSP	BISB ASSY	VWG1558
NSP	LMSB ASSY	VWG1612

△	POWER SUPPLY ASSY	VWR1270
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NSP	FLKB ASSY	VWM1667
	FLKY ASSY	VWG1721
	KEYB ASSY	VWG1709

NSP	MOTHER ASSY (CLD-D590)	VWM1646
NSP	MOTHER ASSY (CLD-D390)	VWM1679
	MOTHER ASSY (CLD-D590)	VWS1229
	MOTHER ASSY (CLD-D390)	VWS1228
NSP	CNNB ASSY (CLD-D590 ONLY)	VWV1472

Note :

The PKSB, FG, TNSB, BISB, LMSB and POWER SUPPLY assemblies are same as that of CLD - D790.

FLKB ASSY

OTHERS

PC Board FLKB	VNP1536
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FLKY ASSY

SEMICONDUCTORS

IC101	PDG178A
IC102	S-806D
Q103	DTA124ES
Q102	DTA144ES
Q101	DTC114ES

Q104-Q106	DTC124ES
D106	1SS254
D112, D113	SLR-342MCT31
D111	SLR-342VCT31

SWITCHES

S101-S103	ASG1034
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CAPACITORS

C104	CEAL100M16
C106	CEJA100M16
C101	CEJA470M10
C401	CKPUYB331K50
C102, C103, C105, C109	CKPUYF223Z25

RESISTORS

All Resistors	RD1/4PU□□□J
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Mark	No.	Description	Part No.
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OTHERS

CN102	1.25FJ CONNECTOR	13P-1.25FJ
CN101	FFC BOTTOM CONNECTOR 18P	52492-1820
X101	CERAMIC RESONATOR (8MHz)	EFOEC8004A4
IR101	REMOTE RECEIVER UNIT	GP1U28X
V101	FL TUBE	VAW1041

SPACER	VEC1599
FL HOLDER	VNF1087

KEYB ASSY

SEMICONDUCTORS

Q201-Q204	DTC124ES
D201, D202	MPG3062X
D203, D204, D213, D214	SLR-342DUT31
D223, D224	SLR-342DUT31

SWITCHES

S201-S209	ASG1034
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RESISTORS

All Resistors	RD1/4PU□□□J
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OTHERS

CN201	1.25FJ CONNECTOR	13R-1.25FJ
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MOTHER ASSY (VWM1646 and VWM1679)

OTHERS

PC Board MOTHER	VNP1554
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MOTHER ASSY (VWS1229 : CLD - D590)

SEMICONDUCTORS

IC904	BA10393F
IC351	CA0002AM
IC701	CXD2046Q
IC803	LA6510
IC400	LA7134M

IC901	LA9420M
IC801	LA9425
IC802	LC78620E
IC703	MC14577CP
IC500	PD0234A

IC101	PD0240B2
IC902	TA8410AK
IC804	TC4W53F
IC202, IC903, IC905	XRA4560F
Q1001, Q102, Q750, Q753, Q916	2PB709A

Q201, Q202, Q391, Q393, Q394	2PD601A
Q451, Q475, Q702, Q703, Q805	2PD601A
Q9001, Q903, Q904, Q907, Q908	2PD601A
Q915, Q917	2PD601A
Q834	2SA854S

Mark	No.	Description	Part No.
	Q2901		2SC1740S
	Q411, Q803		2SC2412K
	Q152		2SC3802K
	Q204, Q205		2SD2144S
	Q208, Q301, Q302, Q392		DTA124EK
	Q103, Q303, Q901, Q910, Q918		DTC124EK
	Q840		FMY1A
	D102, D180, D203, D204, D801		1SS254
	D901, D902, D905, D963		1SS254
	D301, D303, D304, D802		1SS355
	D805		KV1851
	D110		MTZJ5. 1B

COILS AND FILTERS

F500, F547, F548, F5554	DTF1069
L5004	LAU010J
L413	LAU100J
L410	LAU101J
L351, L802-L804	LAU181J
L100, L352, L412, L461, L470	LAU220J
L700, L750-L752, L800, L801	LAU220J
L806-L809	LAU220J
L411, L571	LAU270J
L420, L421, L580	LAU430J
L462	LAU560J
L414	LAU8R2J
L460	LFA561J
F501	VTF1055
L5005	VTH1024

CAPACITORS

C562	CCSQCH050C50
C751	CCSQCH060D50
C436, C809, C811	CCSQCH070D50
C420, C421, C438, C466, C583	CCSQCH100D50
C370, C810, C846, C848, C891	CCSQCH101J50
C944	CCSQCH101J50
C434, C437, C474, C579	CCSQCH120J50
C416	CCSQCH121J50
C415, C418, C475	CCSQCH150J50
C161, C258, C259, C353, C812	CCSQCH151J50
C352, C552	CCSQCH180J50
C5011, C750, C753, C813, C823	CCSQCH220J50
C950	CCSQCH220J50
C162, C417, C591, C935	CCSQCH221J50
C371, C419, C433, C467, C931	CCSQCH270J50
C106, C107, C354, C435, C452	CCSQCH330J50
C553, C563, C580	CCSQCH330J50
C351, C425, C476	CCSQCH390J50
C260-C263, C464, C468	CCSQCH470J50
C6001, C6002, C619, C710	CCSQCH470J50
C719-C721, C754	CCSQCH470J50
C288	CCSQCH471J50
C752	CCSQCH560J50
C375, C561, C806	CCSQCH680J50
C374, C814	CCSQCH820J50
C460, C462, C759	CCSQCH910J50
C439	CEAL100M16
C7003, C703, C763, C844	CEAL470M10
C412, C765, C836	CEAL470M6R3
C838	CEALNP470M6R3

Mark	No.	Description	Part No.
	C972		CEANP220M10
	C450		CEANP470M6R3
	C227, C281, C904		CEAS010M50
	C274, C275, C2901, C367		CEAS100M50
	C364, C424, C493, C917		CEAS101M10
	C821, C922, C967		CEAS220M25
	C845, C870, C902, C926		CEAS2R2M50
	C101, C225, C226, C270, C271		CEAS470M10
	C363, C369, C530, C534, C538		CEAS470M10
	C550, C585, C588, C700		CEAS470M10
	C7001, C7002, C701, C702, C704		CEAS470M10
	C801, C803, C820, C833, C842		CEAS470M10
	C882, C890, C893, C898, C927		CEAS470M10
	C933, C974, C975		CEAS470M10
	C368, C943		CEASR47M50
	C968, C987		CEHAQ220M50
	C491		CEJA221M6R3
	C484		CEJA331M6R3
	C850		CEJA4R7M35
	C256, C490, C705, C907		CKSQYB102K50
	C915, C981		CKSQYB104K25
	C919		CKSQYB332K50
	C361, C362		CKSQYB392K50
	C355-C358, C377, C909		CKSQYB472K50
	C110, C122, C160, C196-C198		CKSQYF103Z50
	C289, C372, C373, C376, C451		CKSQYF103Z50
	C454, C532, C533, C570		CKSQYF103Z50
	C577, C578, C581, C723, C802		CKSQYF103Z50
	C804, C807, C819, C822		CKSQYF103Z50
	C831, C832, C834, C835, C843		CKSQYF103Z50
	C876, C883, C884, C888, C889		CKSQYF103Z50
	C892, C897, C918, C928, C929		CKSQYF103Z50
	C932, C937, C938, C941		CKSQYF103Z50
	C961, C962, C964, C971, C982		CKSQYF103Z50
	C102, C103, C151, C284, C285		CKSQYF104Z25
	C365, C366, C391, C413		CKSQYF104Z25
	C422, C423, C453, C457, C458		CKSQYF104Z25
	C485, C492, C494, C5006, C531		CKSQYF104Z25
	C539, C551, C574, C582, C587		CKSQYF104Z25
	C589, C592, C7004, C706-C708		CKSQYF104Z25
	C711-C718, C722, C724-C726		CKSQYF104Z25
	C756, C758, C762, C764, C766		CKSQYF104Z25
	C827, C828, C840, C841, C847		CKSQYF104Z25
	C872-C874, C901, C910-C912		CKSQYF104Z25
	C976, C983		CKSQYF104Z25
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C280		CKSQYF333Z50
	C465, C808, C815, C875, C877		CKSQYF473Z25
	C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C913, C920		CQMA104J50
	C479, C908, C973		CQMA154J50
	C903		CQMA222J50
	C278, C282		CQMA332J50

CLD - D790, CLD - D590, CLD - D390

Mark	No.	Description	Part No.
	C923		CQMA473J50
	C934		CQMA681J50
	C483		CQMA683J50
	C871	(10 μ F/16V NP)	VCH1152
	VC901	(20pF)	VCM-008

RESISTORS

R420	RD1/4PU470J
R490, R987, R989	RN1/10SE103D
R880, R383	RN1/10SE104D
R765, R766	RN1/10SE222D
R704, R705	RN1/10SE271D
R703, R707, R752, R762, R763	RN1/10SE332D
R879, R986, R990	RN1/10SE333D
R702	RN1/10SE392D
R701, R708	RN1/10SE472D
R259-R262, R881, R882	RN1/10SE473D
R706	RN1/10SE562D
R927	RN1/6PQ5101F
VR450 (2.2k Ω)	PCP1025
VR603 (4.7k Ω)	RCP1020
VR604, VR607, VR608 (47k Ω)	RCP1047

Other Resistors RS1/10S□□□J

OTHERS

CN108	12P FFC CONNECTOR	52045-1245
CN107	18P FFC CONNECTOR	52045-1845
CN102	21P FFC CONNECTOR	52045-2145
CN103	23P FFC CONNECTOR	52233-2310
CN106	11P TOP POST	B11P-SHF-1AA
CN503, CN701	B TO B CONNECTOR 12P	BTFN12S-3SB7
JA3, JA4	REMOTE CONTROL JACK	PKN1004
	PCB BINDER	VEF1040
JA6	4P PIN JACK	VKB1065
JA13	RF PIN JACK	VKB1068
JA14	2P PIN JACK	VKB1069
JA702	S TERMINAL (8P)	VKN1134
	SCREW TERMINAL	VNE1948
	EARTH METAL	VNF1084
X101	CERAMIC RESONATOR (9.00MHz)	VSS1040
X550	CRYSTAL RESONATOR (14.318MHz)	VSS1073
X801	CRYSTAL RESONATOR (16MHz)	VSS1081

MOTHER ASSY(VWS1228 : CLD- D390)

SEMICONDUCTORS

IC904	BA10393F
IC351	CA0002AM
IC803	LA6510
IC400	LA7134M
IC901	LA9420M
IC801	LA9425
IC802	LC78620E
IC703	MC14577CP
IC500	PD0234A
IC101	PD0240B2

Mark	No.	Description	Part No.
	IC902		TA8410AK
	IC804		TC4W53F
	IC202, IC903, IC905		XRA4560F
	Q1001, Q102, Q501, Q916		2PB709A
	Q201, Q202, Q391, Q393, Q394		2PD601A
	Q451, Q475, Q701, Q805, Q9001		2PD601A
	Q903, Q904, Q907, Q908, Q915		2PD601A
	Q917		2PD601A
	Q834		2SA854S
	Q2901		2SC1740S
	Q411, Q803		2SC2412K
	Q152		2SC3802K
	Q204, Q205		2SD2144S
	Q208, Q301, Q392		DTA124EK
	Q103, Q303, Q901, Q910, Q918		DTC124EK
	Q840		FMY1A
	D102, D180, D203, D204, D801		1SS254
	D901, D902, D905, D963		1SS254
	D802		1SS355
	D805		KV1851
	D110		MTZJ5. 1B

COILS AND FILTERS

F500, F547, F548, F5554	DTF1069
L413	LAU100J
L410	LAU101J
L351, L802-L804	LAU181J
L100, L352, L412, L461, L470	LAU220J
L800, L801, L806-L809	LAU220J
L411, L571, L590, L591	LAU270J
L420, L421, L580	LAU430J
L462	LAU560J
L414	LAU8R2J
L460	LFA561J
F501	VTF1055
L5005	VTH1024

CAPACITORS

C562	CCSQCH050C50
C436, C617, C809, C811	CCSQCH070D50
C420, C421, C438, C466, C583	CCSQCH100D50
C370, C810, C846, C848, C891	CCSQCH101J50
C944	CCSQCH101J50
C434, C437, C474, C579	CCSQCH120J50
C416	CCSQCH121J50
C415, C418, C475, C594	CCSQCH150J50
C161, C258, C259, C353, C812	CCSQCH151J50
C352, C552	CCSQCH180J50
C5011, C618, C813, C823, C950	CCSQCH220J50
C162, C417, C591, C935	CCSQCH221J50
C371, C419, C433, C467, C931	CCSQCH270J50
C106, C107, C354, C435, C452	CCSQCH330J50
C553, C563, C580	CCSQCH330J50
C351, C425, C476, C598	CCSQCH390J50
C260-C263, C464, C468, C596	CCSQCH470J50
C6001, C6002, C619	CCSQCH470J50
C288	CCSQCH471J50
C375, C561, C806	CCSQCH680J50

CLD - D790, CLD - D590, CLD - D390

Mark	No.	Description	Part No.
	C374, C814 C460, C462 C439 C763, C844 C412, C765, C836		CCSQCH820J50 CCSQCH910J50 CEAL100M16 CEAL470M10 CEAL470M6R3
	C838 C972 C450 C227, C281, C904 C274, C275, C2901, C367		CEALNP470M6R3 CEANP220M10 CEANP470M6R3 CEAS010M50 CEAS100M50
	C364, C424, C493, C917 C821, C922, C967 C845, C870, C902, C926 C101, C225, C226, C270, C271 C363, C369, C530, C534, C538		CEAS101M10 CEAS220M25 CEAS2R2M50 CEAS470M10 CEAS470M10
	C550, C585, C588, C700, C701 C801, C803, C820, C833, C842 C882, C890, C893, C898, C927 C933, C974, C975 C368, C943		CEAS470M10 CEAS470M10 CEAS470M10 CEAS470M10 CEASR47M50
	C968, C987 C491 C484 C850 C256, C490, C907		CEHAQ220M50 CEJA221M6R3 CEJA331M6R3 CEJA4R7M35 CKSQYB102K50
	C915, C981 C919 C361, C362 C355-C358, C377, C909 C110, C122, C160, C196-C198		CKSQYB104K25 CKSQYB332K50 CKSQYB392K50 CKSQYB472K50 CKSQYF103Z50
	C289, C372, C373, C376, C451 C454, C532, C533, C570 C577, C578, C581, C802, C804 C807, C819, C822, C831, C832 C834, C835, C843, C876		CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50
	C883, C884, C888, C889, C892 C897, C918, C928, C929, C932 C937, C938, C941, C961, C962 C964, C971, C982 C102, C103, C151, C284, C285		CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF104Z25
	C365, C366, C391, C413 C422, C423, C453, C457, C458 C485, C492, C494, C5006, C531 C539, C551, C574, C582, C587 C589, C592, C725, C726, C764		CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25
	C766, C827, C828, C840, C841 C847, C872-C874, C901 C910-C912, C976, C983 C837, C921, C930 C359, C360, C905, C951		CKSQYF104Z25 CKSQYF104Z25 CKSQYF104Z25 CKSQYF223Z50 CKSQYF224Z25
	C280 C465, C808, C815, C875, C877 C924, C925 C942 C913, C920		CKSQYF333Z50 CKSQYF473Z25 CKSQYF473Z25 CQMA103J50 CQMA104J50

Mark	No.	Description	Part No.
	C479, C908, C973 C903 C278, C282 C923 C934		CQMA154J50 CQMA222J50 CQMA332J50 CQMA473J50 CQMA681J50
	C483 C871 (10 μ F/16V NP) VC901 (20pF)		CQMA683J50 VCH1152 VCM-008

RESISTORS

R420 R490, R987, R989 R880, R883 R765, R766 R764	RD1/4PU470J RN1/10SE103D RN1/10SE104D RN1/10SE222D RN1/10SE332D
R879, R986, R990 R259-R262, R881, R882 R927 VR450 (2.2k Ω) VR603 (4.7k Ω)	RN1/10SE333D RN1/10SE473D RN1/6PQ5101F PCP1025 RCP1020
VR604, VR607, VR608 (47k Ω) Other Resistors	RCP1047 RS1/10S□□□J

OTHERS

CN108 12P FFC CONNECTOR CN107 18P FFC CONNECTOR CN102 21P FFC CONNECTOR CN103 23P FFC CONNECTOR CN106 11P TOP POST	52045-1245 52045-1845 52045-2145 52233-2310 B11P-SHF-1AA
JA3, JA4 REMOTE CONTROL JACK PCB BINDER JA6 4P PIN JACK JA13 RF PIN JACK JA14 2P PIN JACK	PKN1004 VEF1040 VKB1065 VKB1068 VKB1069
SCREW TERMINAL EARTH METAL X101 CERAMIC RESONATOR(9.00MHz) X550 CRYSTAL RESONATOR(14.318MHz) X801 CRYSTAL RESONATOR(16MHz)	VNE1948 VNF1084 VSS1040 VSS1073 VSS1081

CNNB ASSY(CLD- D590 ONLY)

RESISTORS

All Resistors	RS1/10S□□□J
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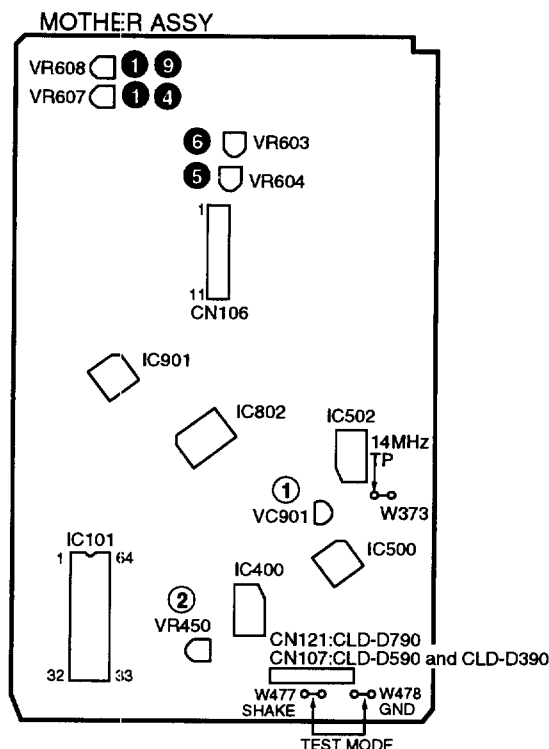
OTHERS

CN510, CN710 B TO B CONNECTOR 12P	BTFN12P-3RD7
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6. ADJUSTMENTS (調整方法)

1. ADJUSTMENT ITEMS AND LOCATION (調整項目と調整位置)

■Adjustment Points (PCB Part)



■Adjustment Items

[Mechanical Part]

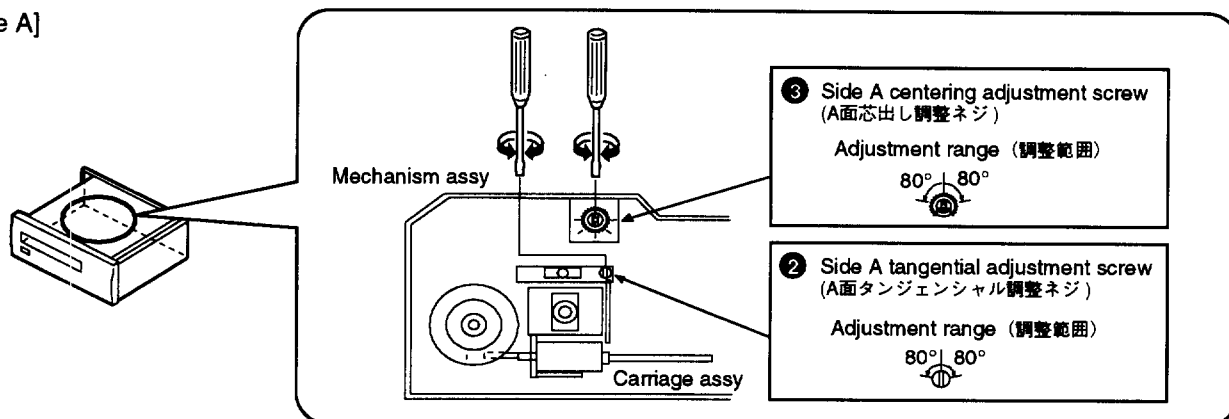
- ① Tilt Offset Adjustment
(チルトオフセット調整)
- ② Tangential Direction Angle Adjustment for Side A
(A面タンジェンシャル傾き調整)
- ③ Spindle Motor Centering Adjustment for Side A
(A面スピンドル芯出し調整)
- ④ Crosstalk Check and Fine Tilt Offset Adjustment for Side A
(A面クロストーク確認及び、チルトオフセット微調)
- ⑤ Focus Servo Loop Gain Adjustment
(フォーカスサーボループゲイン調整)
- ⑥ Tracking Servo Loop Gain Adjustment
(トラッキングサーボループゲイン調整)
- ⑦ Tangential Direction Angle Adjustment for Side B
(B面タンジェンシャル傾き調整)
- ⑧ Spindle Motor Centering Adjustment for Side B
(B面スピンドル芯出し調整)
- ⑨ Crosstalk Check and Fine Tilt Offset Adjustment for Side B
(B面クロストーク確認及び、チルトオフセット微調)

[Electrical Part]

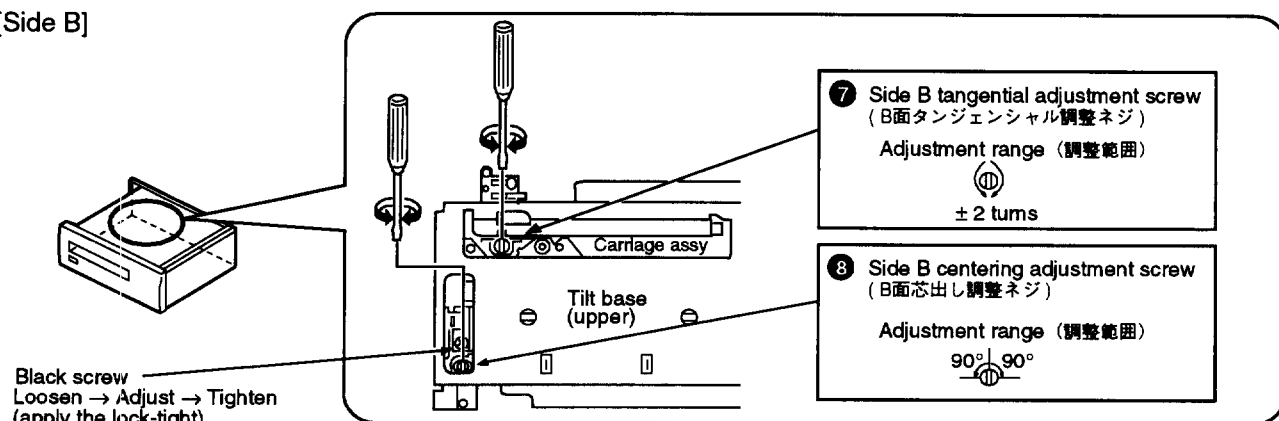
- ① Master Clock Adjustment
(マスタークロック調整)
- ② Output Video Level Adjustment
(出力ビデオレベル調整)

■Adjustment Points (Mechanism Part)

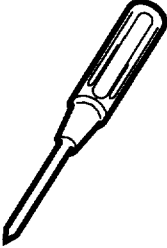
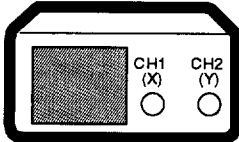
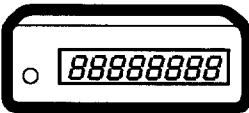
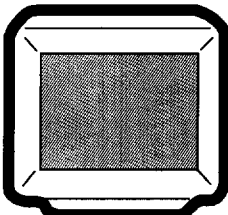
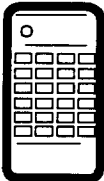
[Side A]



[Side B]

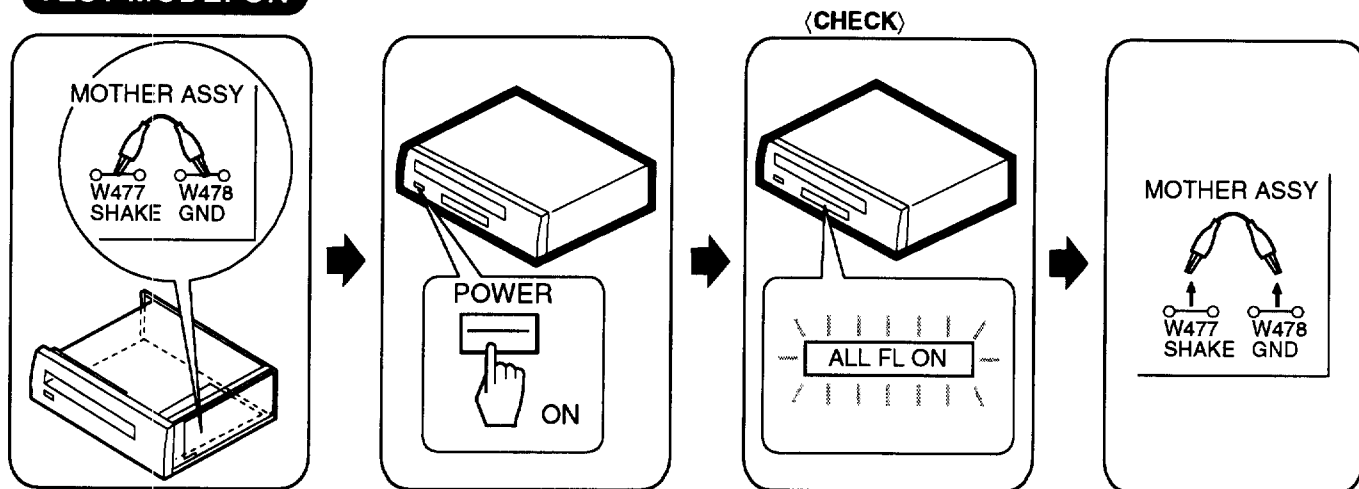


2. JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

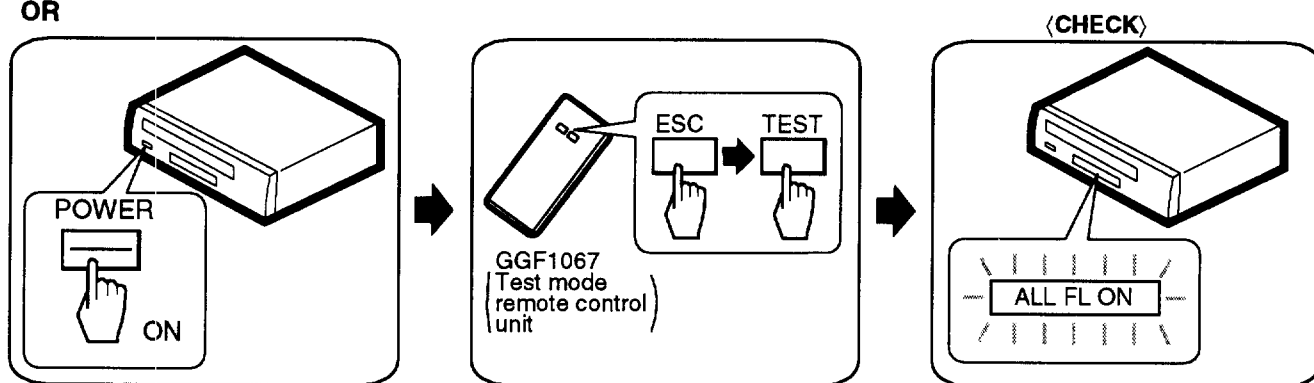
 CD test disc (YEDS-7)	 LD test disc (GGV1012)	 ⊖ Screwdriver (medium)	 ⊖ Screwdriver (small)
 ⊖ Precise screwdriver	 ⊕ Screwdriver (large)	 ⊕ Screwdriver (medium)	 Dual-trace oscilloscope (with delay) Frequency band $\geq 40\text{MHz}$
 Frequency counter Display digit $\geq 8\text{-digit}$	 TV monitor	 Test mode remote control unit (GGF1067)	

3. TEST MODE (テストモード)

TEST MODE: ON

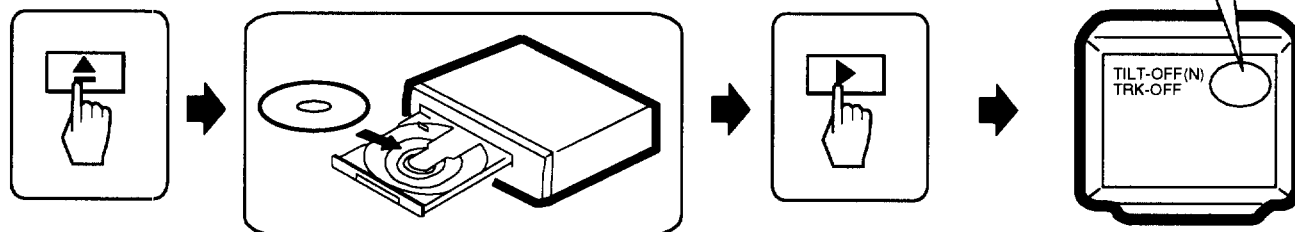


OR

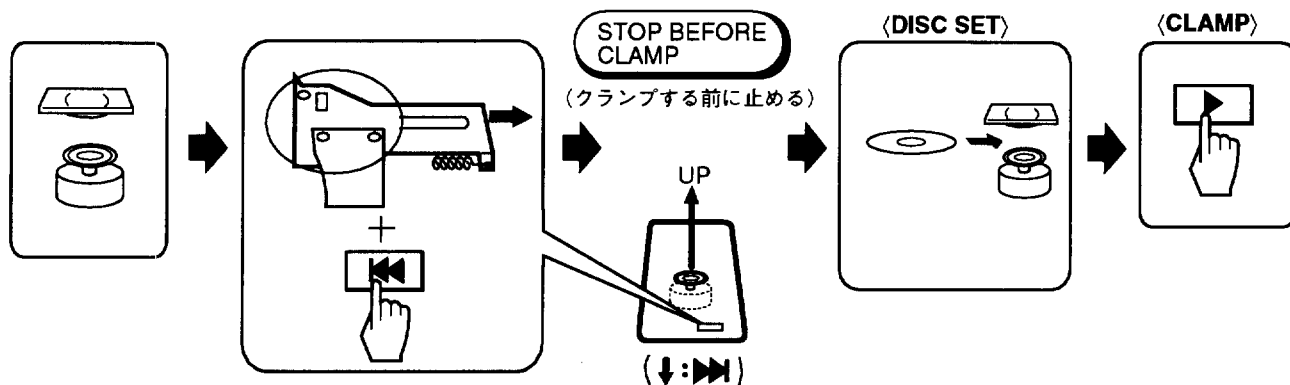


TEST MODE: DISC SET

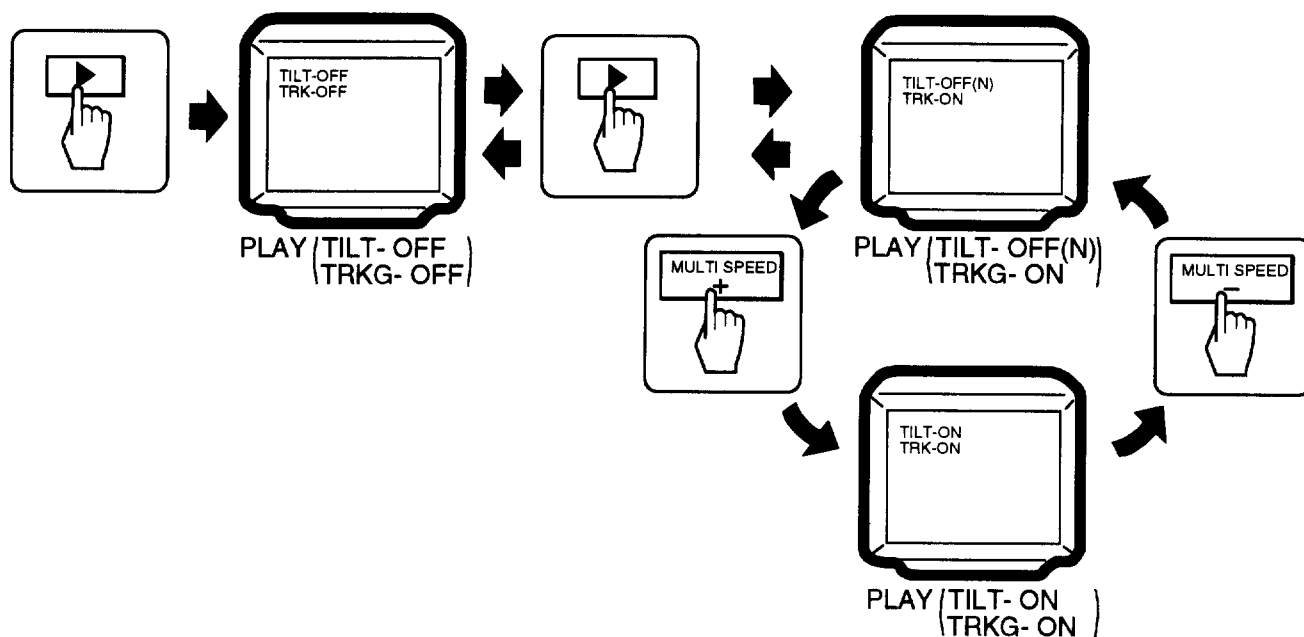
• With TRAY (トレイ有りの場合)



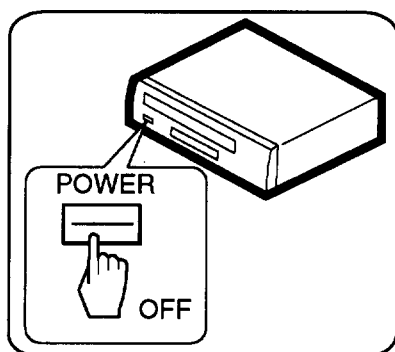
• No TRAY (トレイ無しの場合)



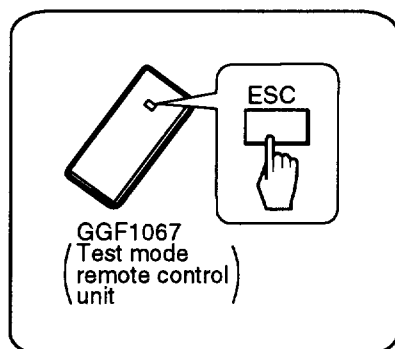
TEST MODE: PLAY



TEST MODE: OFF



OR



4. NECESSARY ADJUSTMENT POINTS (必要な調整項目)

When (このような時)

Adjustment Points

■ EXCHANGE MECHANISM ASSY PARTS (メカASSY部品を交換したとき)

Exchange pickup
(ピックアップを交換したとき)



Mechanical
point

①, ②, ③, ④, ⑤, ⑥, ⑦, ⑧, ⑨

Electric
point

Exchange spindle motor
(スピンドルモータを交換したとき)



Mechanical
point

③, ⑧

Electric
point

■ EXCHANGE PCB ASSY (PCB ASSYを交換したとき)

Exchange board
MOTHER ASSY
(マザーボードを交換したとき)



Mechanical
point

①, ④, ⑤, ⑥, ⑨

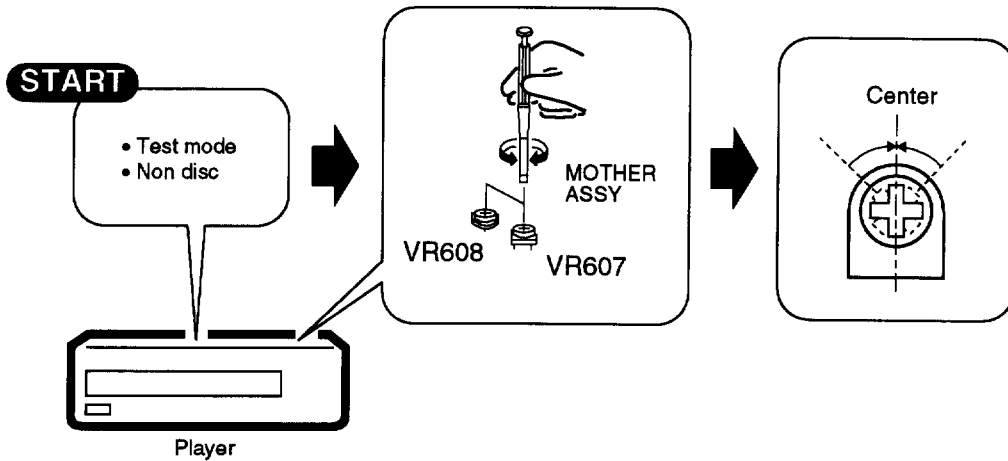
Electric
point

Note : ① and ② are adjusted already. (①, ②は調整済)

5. MECHANICAL ADJUSTMENT (機構系の調整)

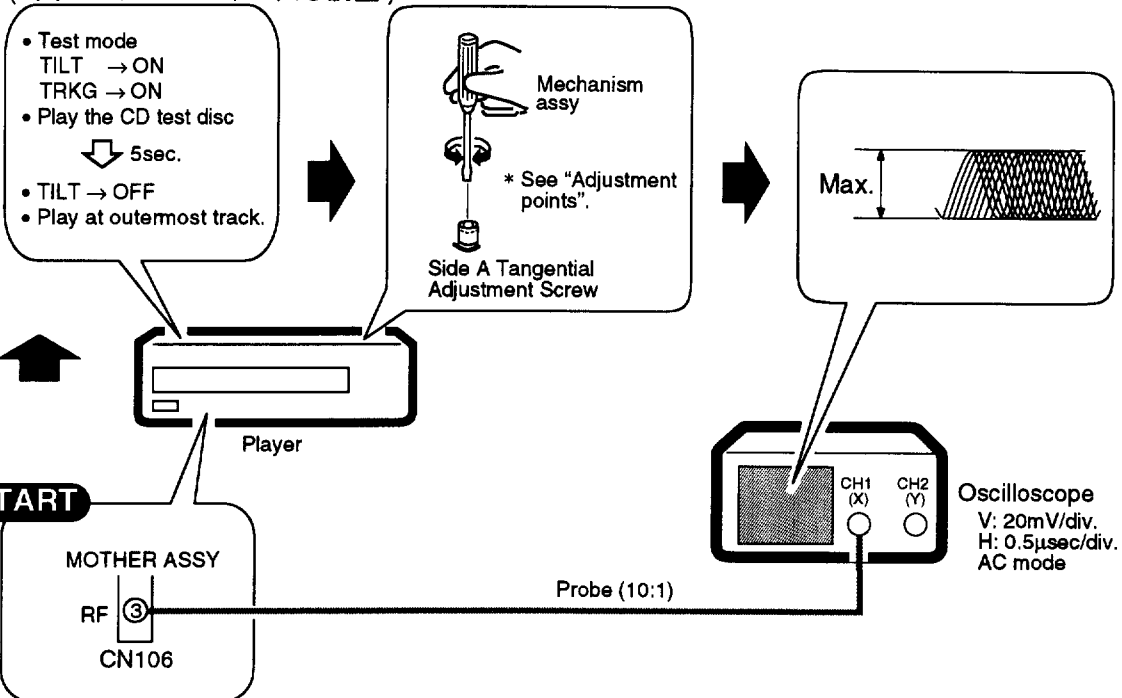
1 Tilt Offset Adjustment

(チルトオフセット調整)



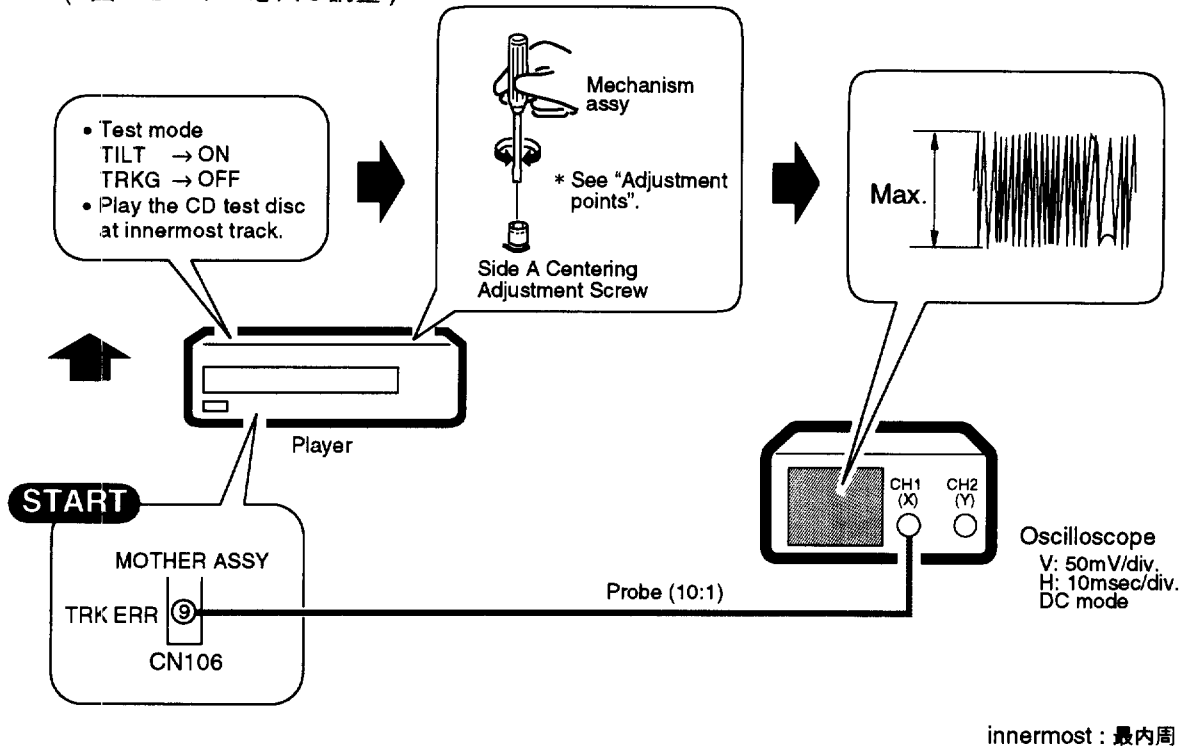
2 Tangential Direction Angle Adjustment for Side A

(A面タンジェンシャル傾き調整)

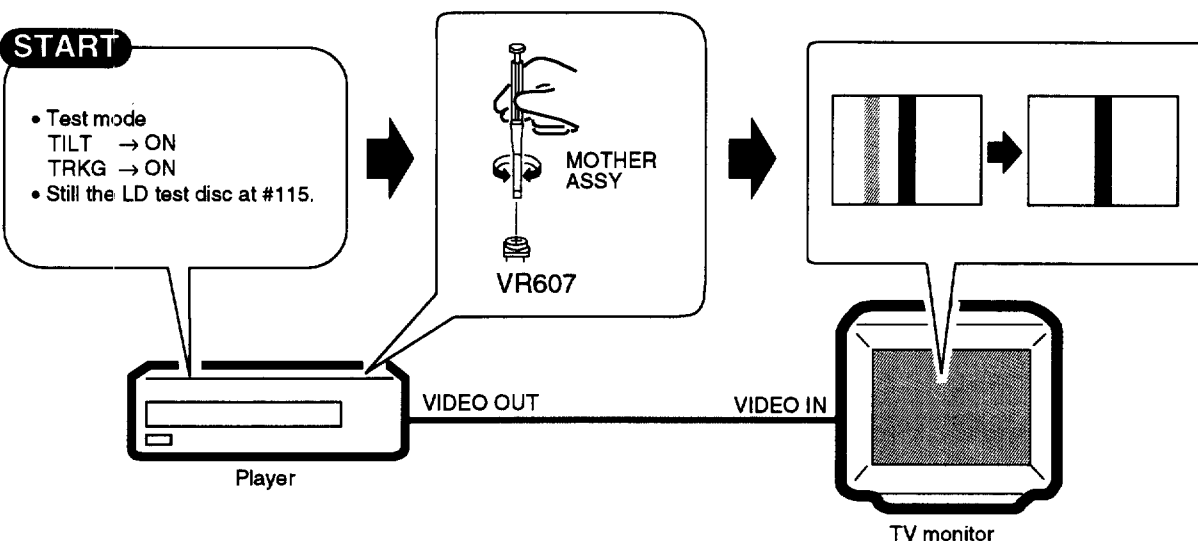


outermost : 最外周

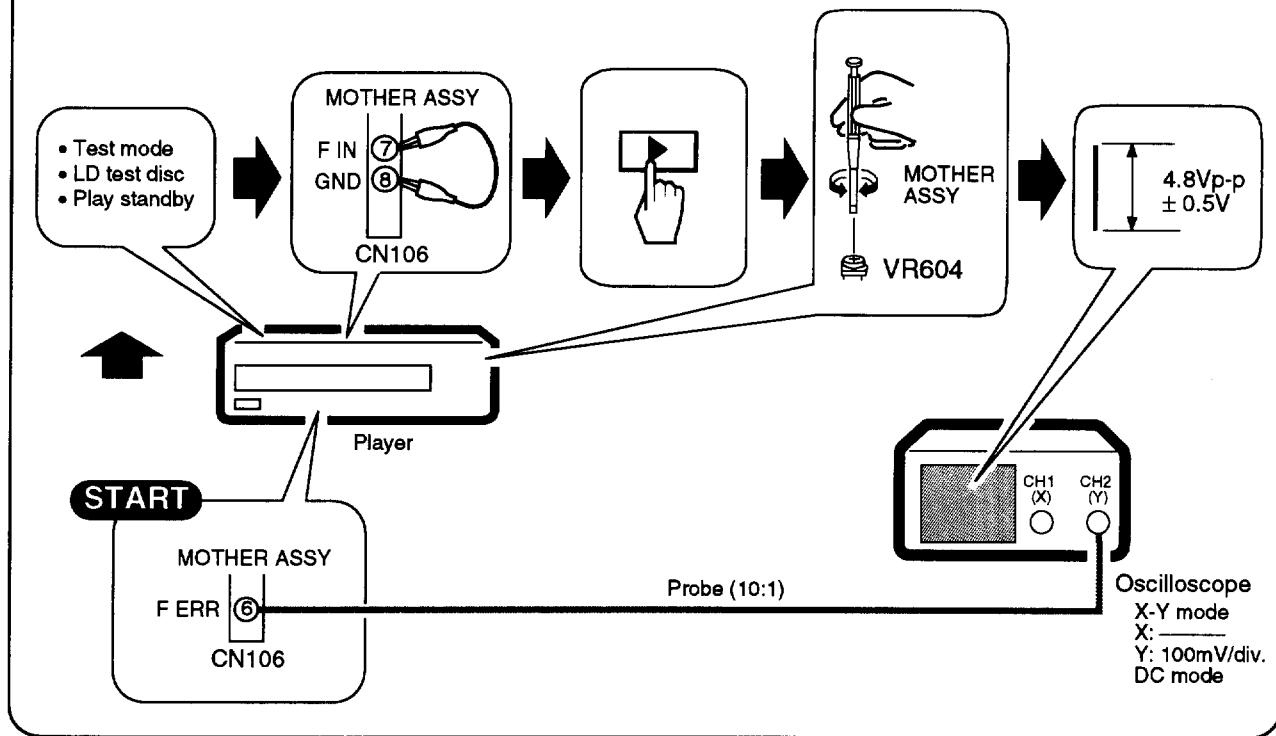
3 Spindle Motor Centering Adjustment for Side A (A面スピンドル芯出し調整)



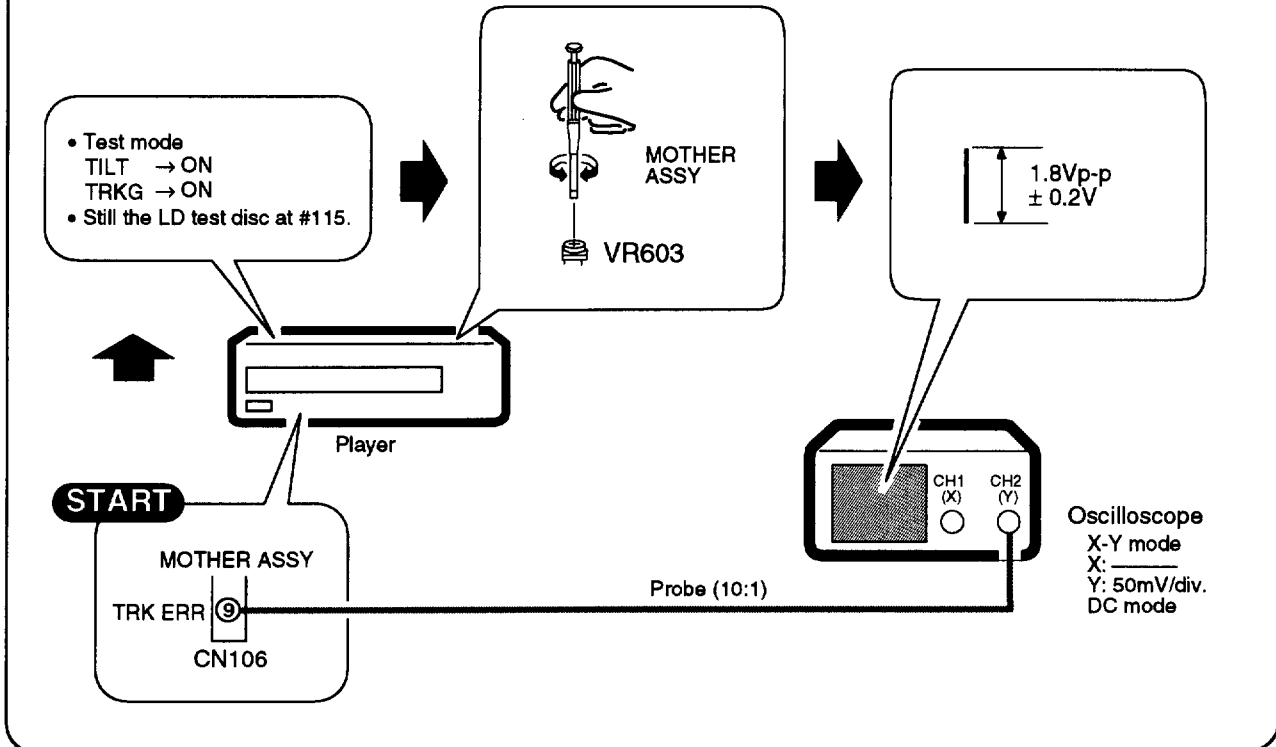
4 Crosstalk Check and Fine Tilt Offset Adjustment for Side A (A面クロストーク確認及び、チルトオフセット微調)



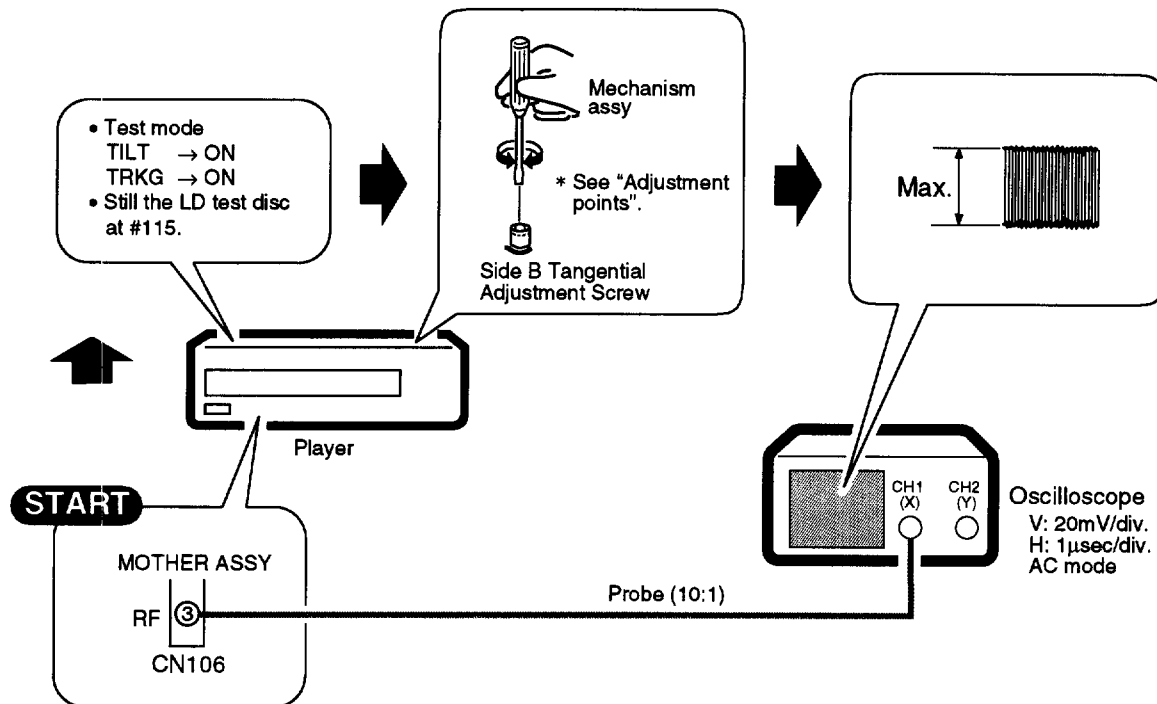
5 Focus Servo Loop Gain Adjustment (フォーカスサーボループゲイン調整)



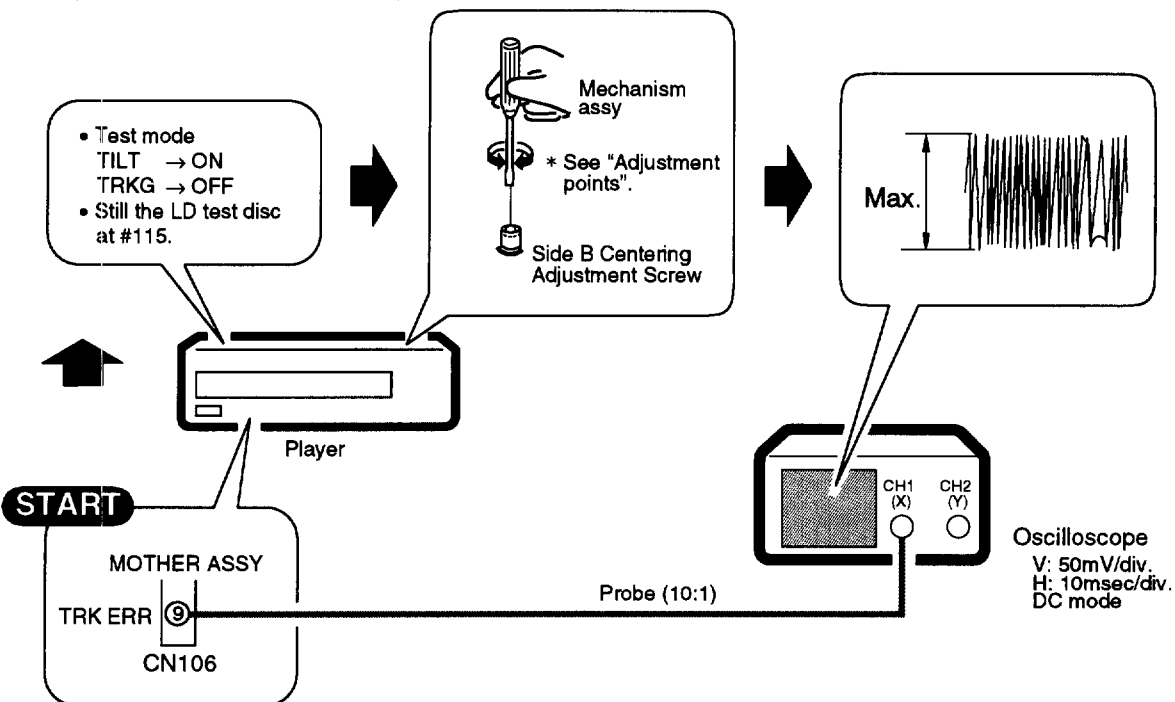
6 Tracking Servo Loop Gain Adjustment (トラッキングサーボループゲイン調整)



7 Tangential Direction Angle Adjustment for Side B (B面タンジェンシャル傾き調整)



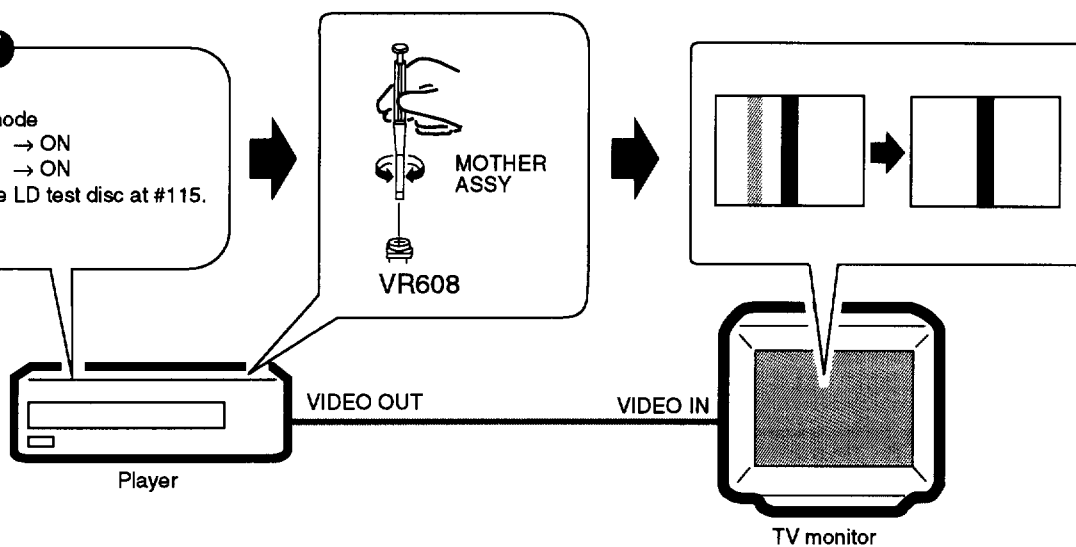
8 Spindle Motor Centering Adjustment for Side B (B面スピンドル芯出し調整)



9 Crosstalk Check and Fine Tilt Offset Adjustment for Side B (B面クロストーク確認及び、チルトオフセット微調)

START

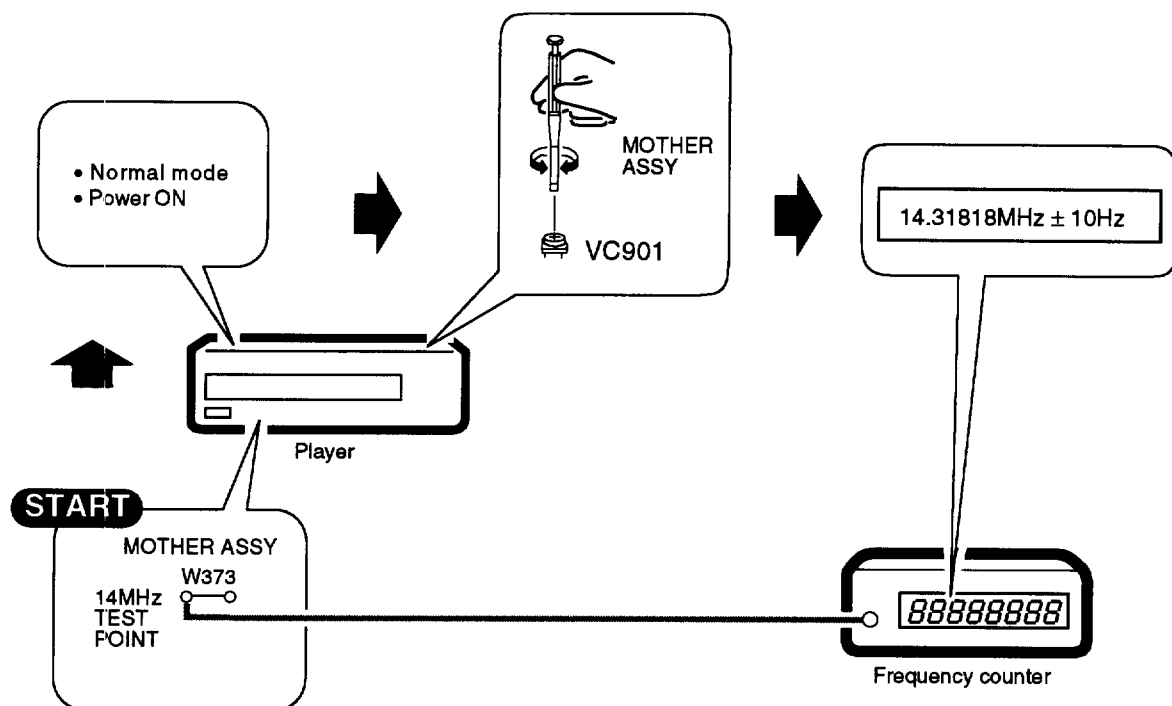
- Test mode
TILT → ON
TRKG → ON
- Still the LD test disc at #115.



6. ELECTRICAL ADJUSTMENT (電気系の調整)

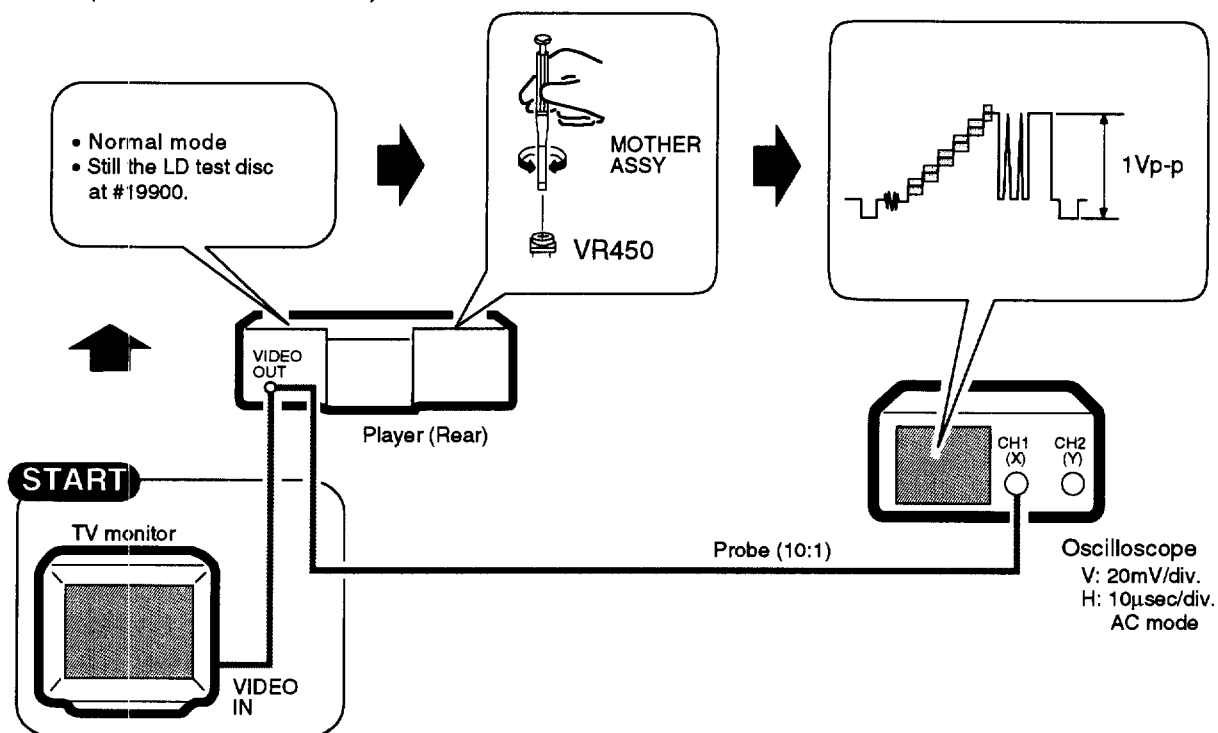
① Master Clock Adjustment (マスタークロック調整)

(マスタークロック調整)



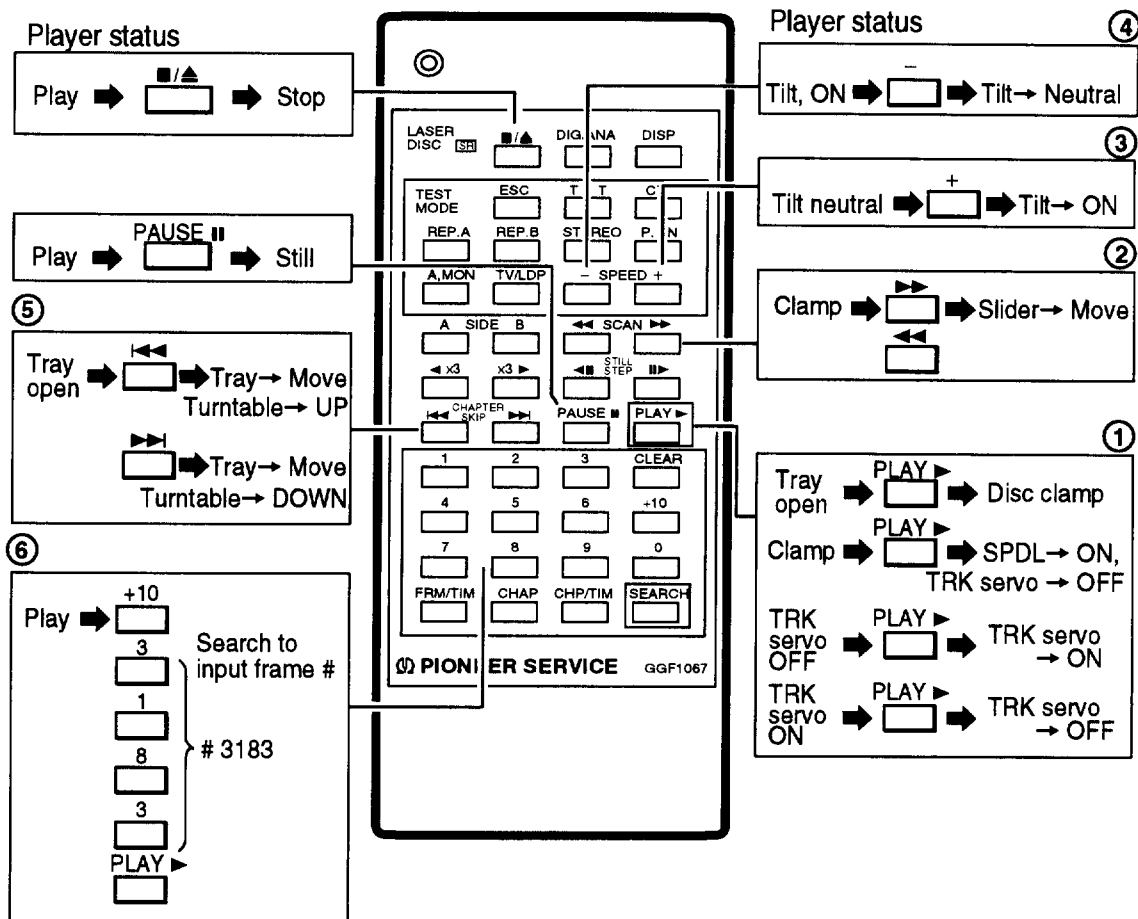
② Output Video Level Adjustment (出力ビデオレベル調整)

(出力ビデオレベル調整)

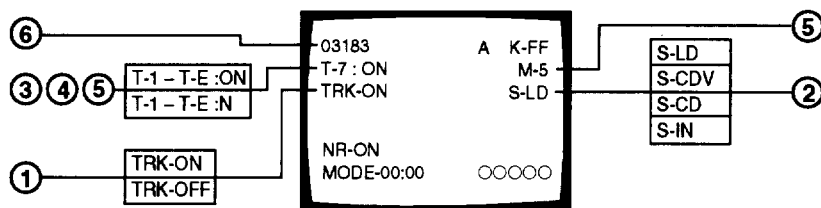


7. OPERATIONS IN THE TEST MODE (テストモード時のサービス用リモコン操作方法)

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display



7. SELF-DIAGNOSTIC FUNCTIONS

7.1 SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the TV screen and front panel fluorescent display section when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the **CLEAR** key for 5 seconds (except a loading error **L *** display). At that time, partial error is displayed with the mechanism switch information. However, if the power cord is unplugged, the error code information is lost.

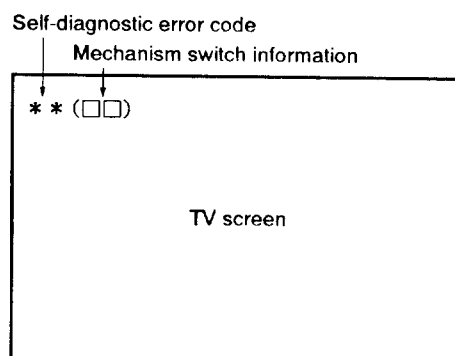


Fig. 1 TV screen display

This table explains the information for analyzing the cause when an error occurs with the CLD player.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode. this error is detected if the overcurrent port is "L" for 4 seconds.	• Motor NG • Clamper rubbing
U0	FG abnormality error	① At LD start-up, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle run command. ② At CD start-up, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③ During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible.	• FG sensor abnormality, FG signal not coming to mechanism controller • FG sensor clogged • Rubbing between FG sensor and slit • Turntable dropped • FG slit deposition NG
H1	Partial short error	① At LD start-up, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle run command. ② At CD start-up, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration.	• Spindle motor NG • Commutator NG • Bearing too tight • Power supply NG
H2 A0	Power supply abnormality error	– 5V power supply abnormality detected. The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.	• – 5V not fed from POWER SUPPLY assy • Parts shorted
L *	Loading error	① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral.	• Tilt switch 1, 2, 3 abnormal, so tilt/loading state not read in correctly • Tilt/loading mechanism mechanically locked • Drive IC NG • Power supply NG
E *	Slider error	During slider movement, a time over-run occurred (track count search 20 seconds, mandatory movement 10 seconds)	• Slider ceased being able to run • The slider mechanism is mechanically locked and can no longer move to its target. • Slider position switch NG • Flexible cable pulled out • Drive IC NG • Power supply abnormal
U1	Miss clamp error	① During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511. ② During start-up, the focus was lost once and refocusing was attempted, but the focus could not be locked. ③ Two FG pulses did not come within 800 ms from from the start of LD start-up. ④ The disc clamp operation did not end within 5 seconds.	• Disc sandwiched • Disc shifted • Spindle motor NG • Disc scratched or dirty defocused during start-up • Two discs loaded • PU actuator NG • Tilt sensor NG • Tilt neutral NG (tilt base NG)

Self-diagnostic error code	Contents	Conditions	Probable cause
P *	Spindle error	① During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ② When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③ The codes could not be read for 10 – 15 seconds consecutively for an LD or 7 – 10 seconds for a CD/CDV and the spindle servo was not locked. ④ The speed exceeded 2100 rpm during LD start up.	P0 : •PH code, SUB - Q code can not be read •VCO, PLL offset out of adjustment •Disc defect P5 : •PAL disc, mirror disc, etc. PLAY •No RF P6 : •Spindle servo does not lock •Spindle motor NG
F *	Focus error	① "In the "no disc" state, a setup command was received from the mode controller. ② When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③ During start-up, the maximum slider servo duty continued for 3 loops or more.	F5 : •CD, LD on top of each other •LD scratched or dirty defocused during slider movement •Disc NG •Slider position switch NG F6 : •Inner edge of disc scratched or dirty •Slider ran into inner edge mechanical stopper

* Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller)
 The probable cause is a defective mechanism controller, disconnected cable, etc..

* Mechanism mode contents (meanig of * for L * etc.)

0 : Play	5 : Setup (rotation start)	9 : Side A → Side B
1 : Open	6 : TOC read	A : Side B → Side A
2 : Standby	7 : Play	
3 : Clamp	8 : Search	
4 : Disc sense		

7.2 FORMAT OF THE MECHANISM SWITCH INFORMATION WHICH IS TRANSMITTED TO THE MODE CONTROL IN THE ERROR OCCURRENCE

• Mechanism switch information (1 7)

Mechanism control → Mode control

Communication byte address 5 (COMBUF5)

(Mode control displays this value as it is.)

Example

1 7

Hexadecimal number system

Hexadecimal number system	Binary number system
0	0 0 0 0
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1
A	1 0 1 0
B	1 0 1 1
C	1 1 0 0
D	1 1 0 1
E	1 1 1 0
F	1 1 1 1

Example

Example

Hexadecimal number system

1

Example

7

Binary number system

0 0 0 1 0 1 1 1
 bit 7 bit 6 bit 5 bit 4 bit 3 bit 2 bit 1 bit 0

TURN A	0 Not used	LTSW1	LTSW2	LTSW3	SLDP1	SLDP2	SLDP3
--------	---------------	-------	-------	-------	-------	-------	-------

TURN A	Slider position
0	Side B
1	Side A

Example of 1 7 is indicated as follows.

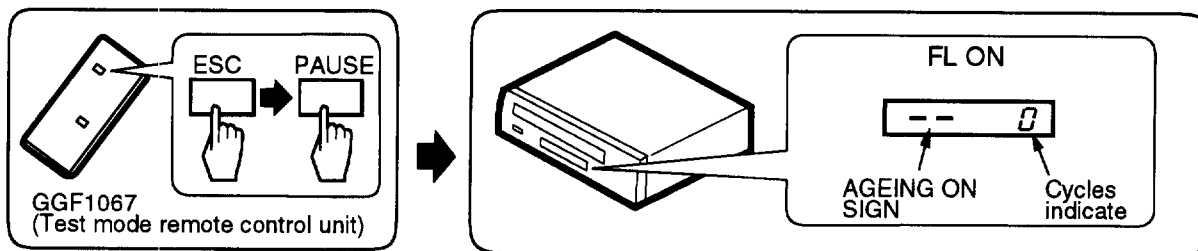
(Slider : Side B
 Tilt : Tilt +
 Position : B - INSIDE)

LTSW	1	2	3	Loading/tilt position
0	1	1		Open (Tray open state)
0	0	1		Loading (During move the tray horizontally)
1	0	1		Standby (Tray close & spindle down state)
1	0	0		Clamp (Durring spindle up or down)
0	0	0		Tilt - (Clamp state)
0	1	0		Tilt + (Clamp state)
1	1	0		Tilt limit (Clamp state)

SLDP	1	2	3	Slider position
1	0	0		CD active position
1	0	1		CDV active position
1	1	0		LD active position
0	1	1		CD inside position
1	1	1		Side B inside position

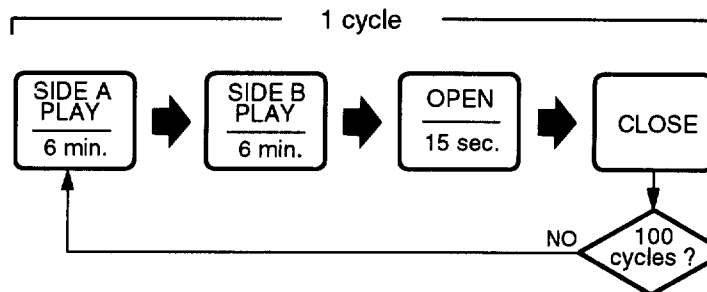
7.3 AGEING MODE (エージングモード)

AGEING MODE: ON

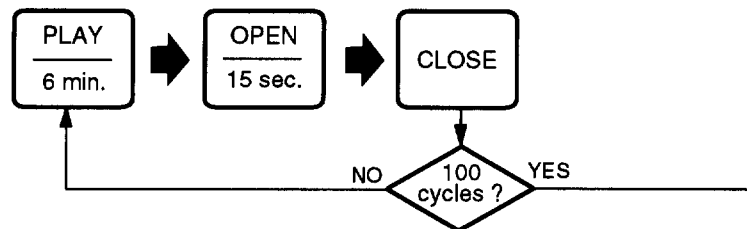


AGEING

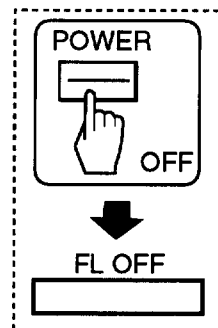
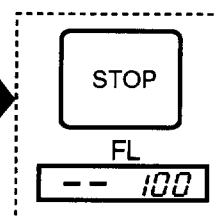
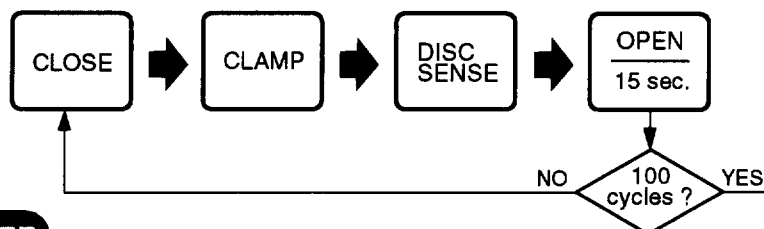
• LD



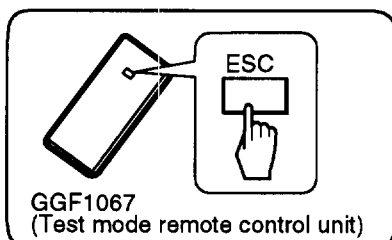
• CD, CDV



• NO DISC

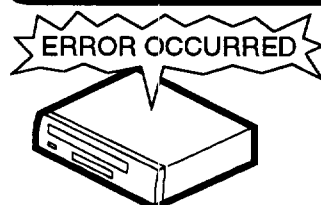


AGEING MODE: OFF



ERROR OCCURRED

ERROR OCCURED : エラー発生



AUTOMATIC

AGEING MODE OFF

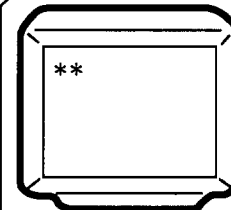
FL

LD

CLEAR

5 sec.

TV monitor



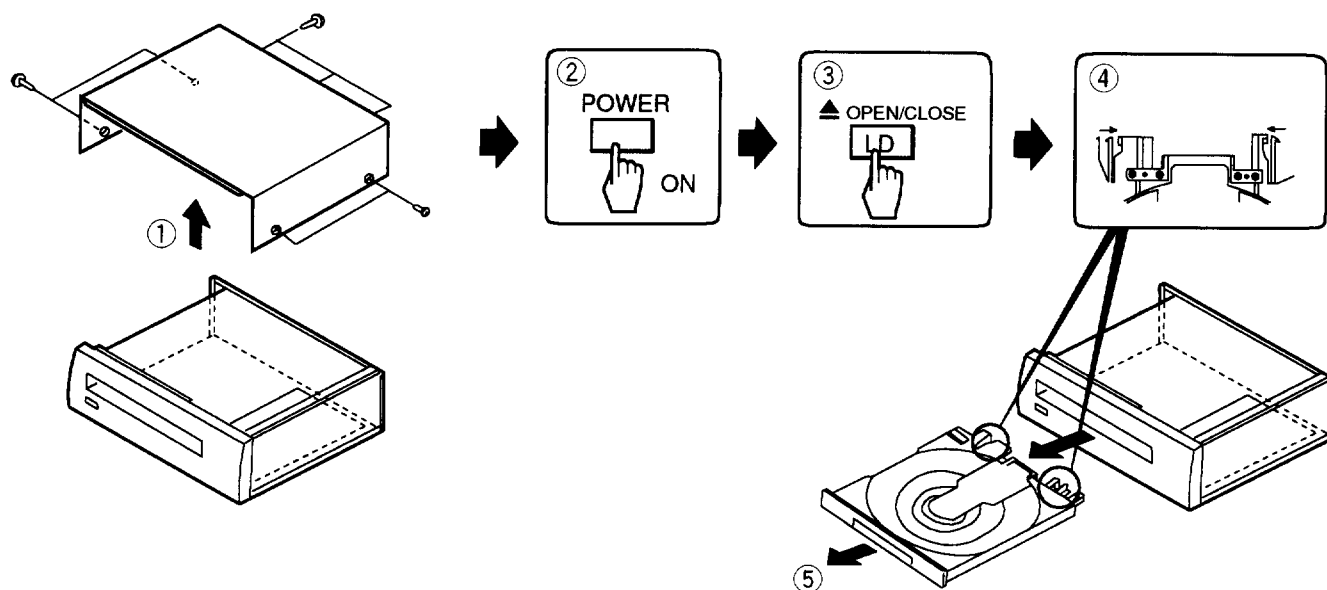
FL

ERROR CODE

8. DISASSEMBLY/ASSEMBLY (分解/組立の手順)

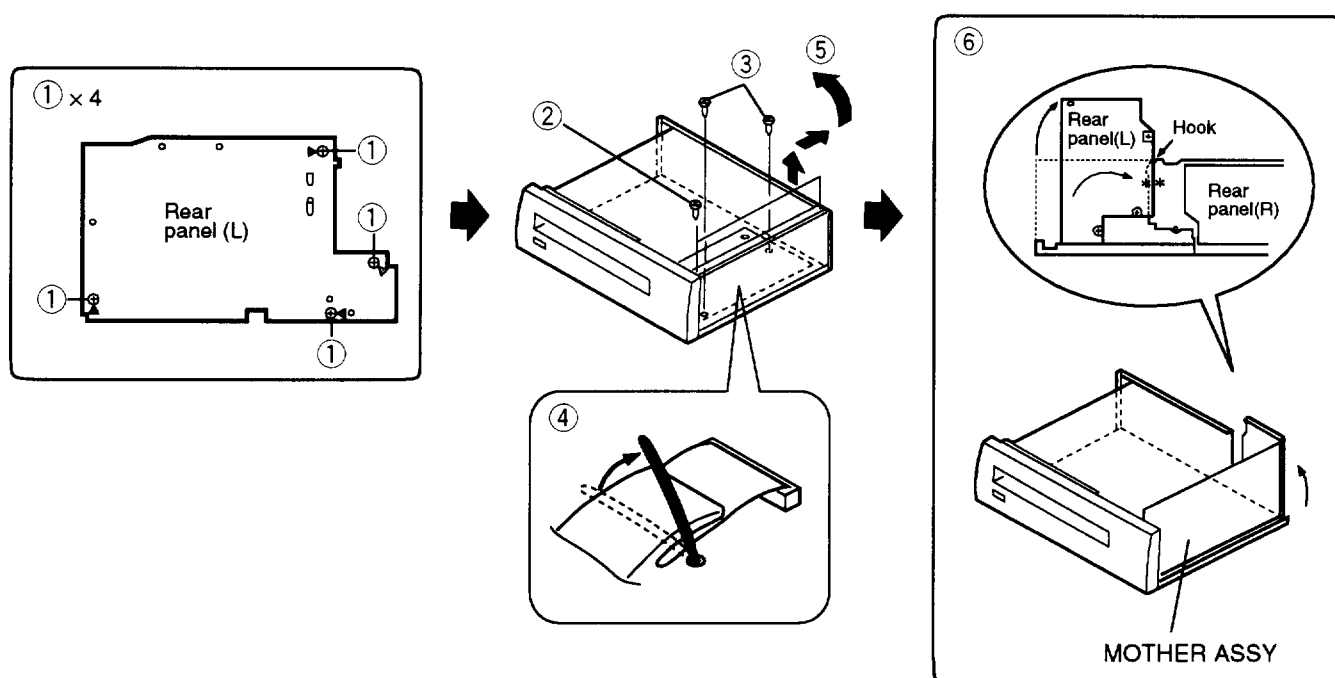
8.1 DISC TRAY

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→①



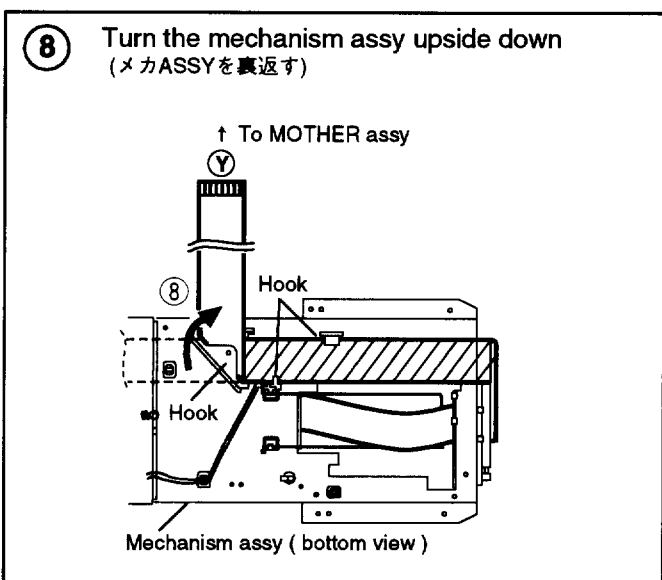
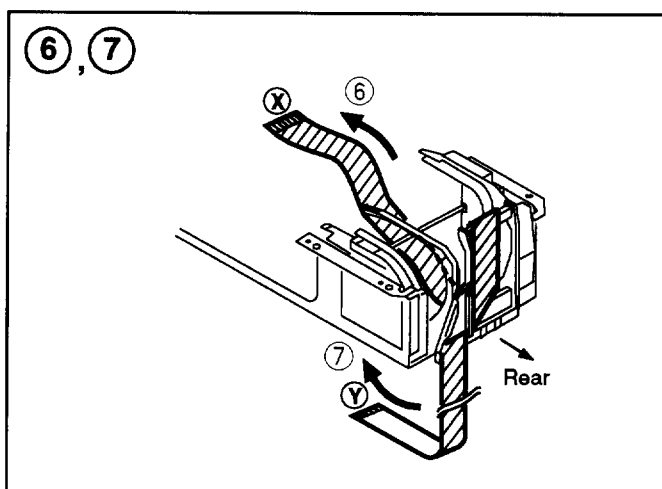
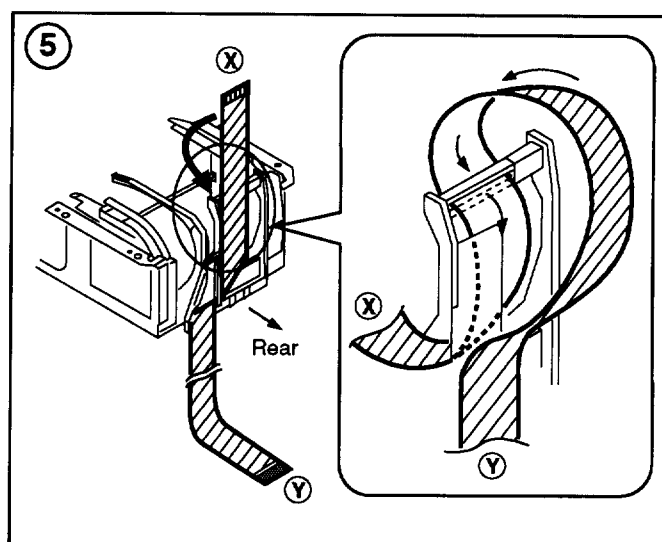
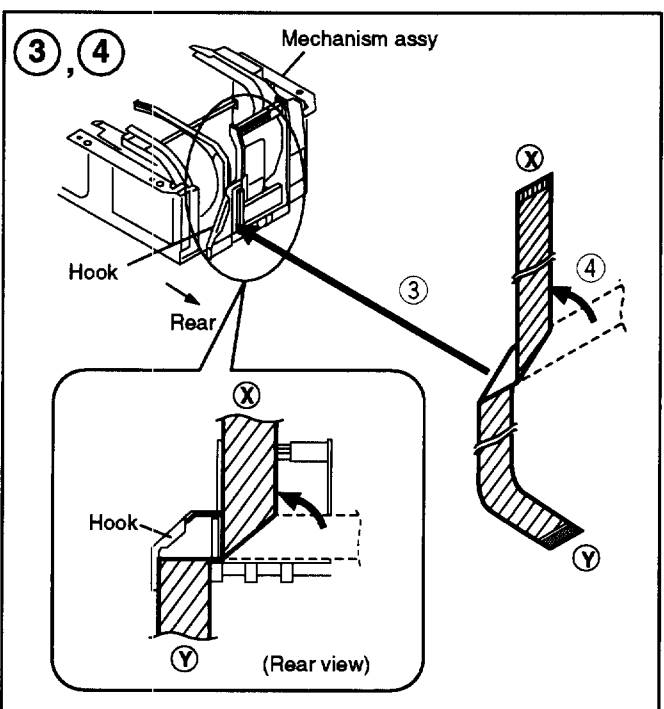
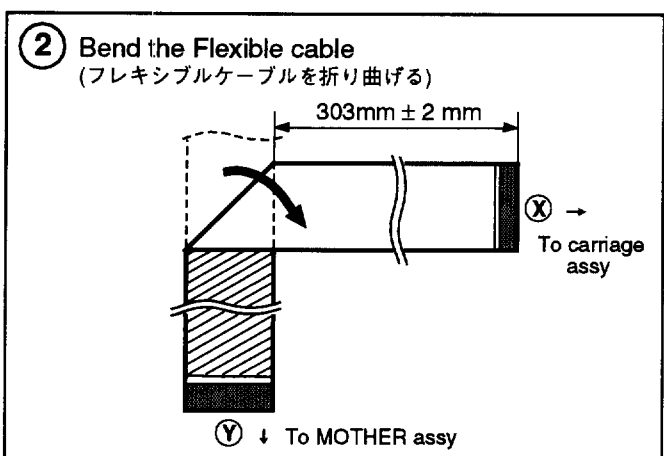
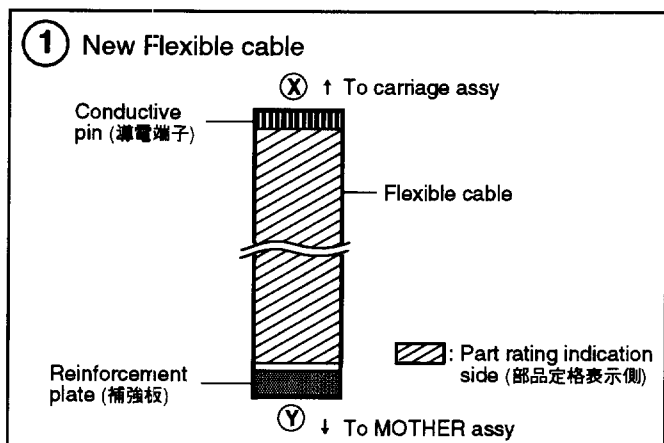
8.2 MOTHER ASSY

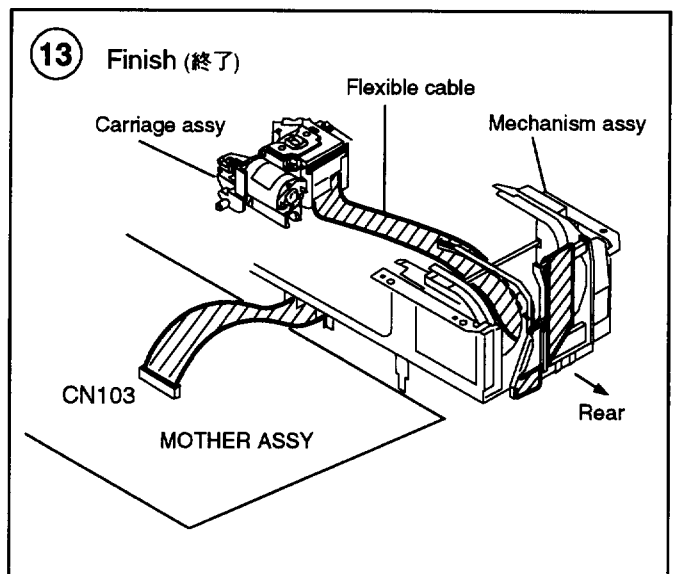
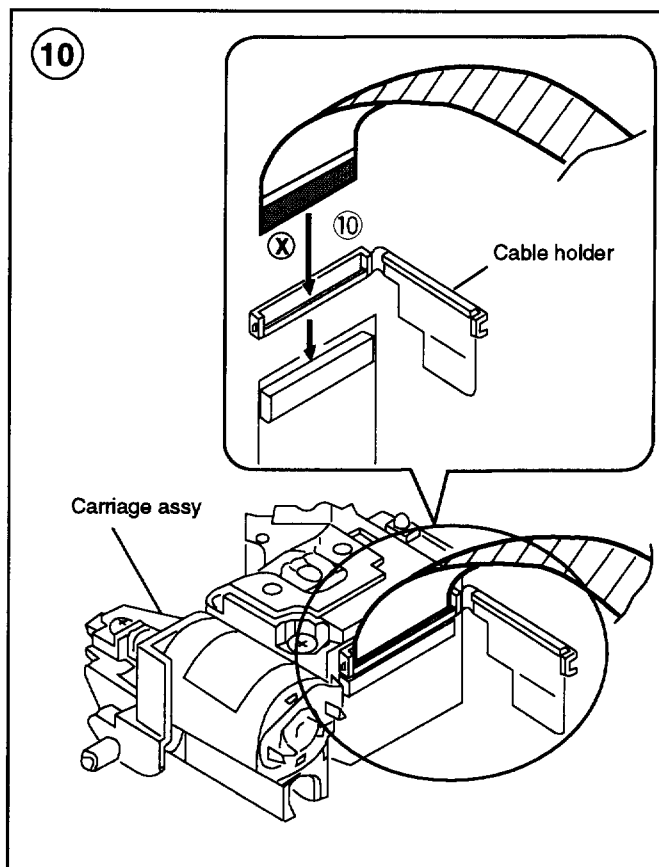
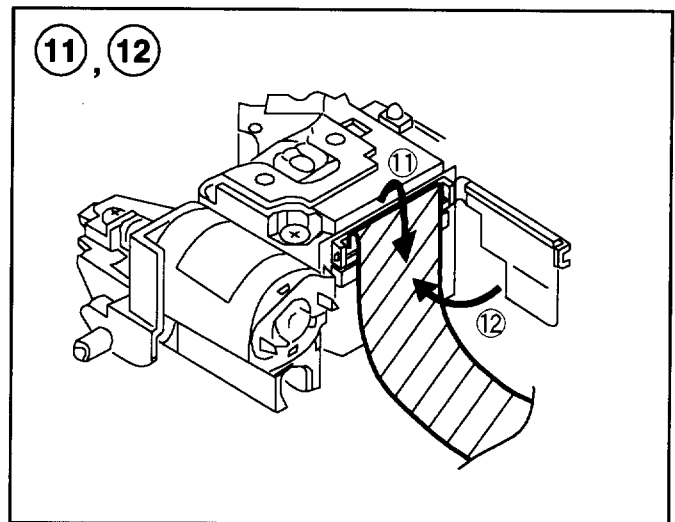
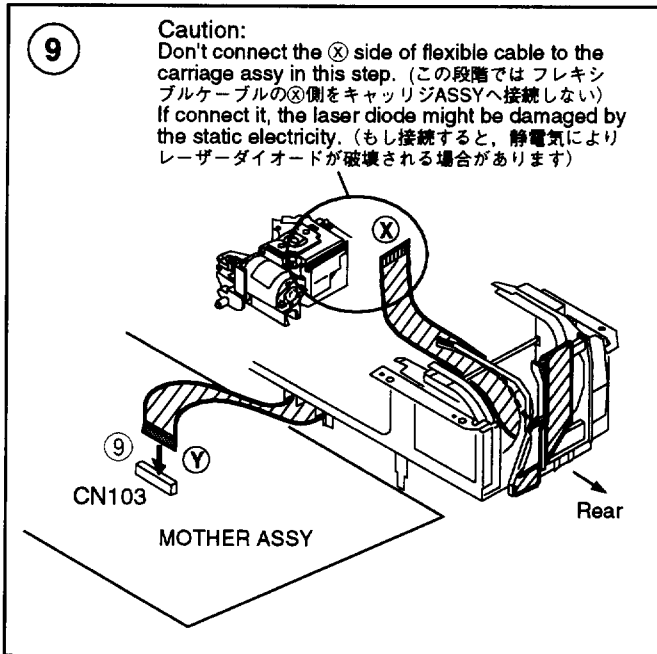
- Disassembly : ①→②→③→④→⑤→⑥
- Assembly : ⑥→⑤→④→③→②→①



8.3 HOW TO INSTALL THE FLEXIBLE CABLE FOR CARRIAGE ASSY

(キャリッジASSY用フレキシブルケーブルの取付方法)





9. IC INFORMATION

•The information in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■PD3335A (FLKY ASSY : IC101)(FOR CLD-D790)

• MODE CONTROL IC

•Pin Function

No.	Mark	Pin name	I/O	Function	No.	Mark	Pin name	I/O	Function
1	VCC	———	I	+5V power supply	33	P46	LED (SIDE B)	O	LED output : Side B indication
2	P90	XRESET OUT	O	MOTHER ASSY reset output	34	P45	LED (LD)	O	LED output : LD indication
3	SCK1	XSCK	I/O	Serial communication clock (mecha. control and character generator)	35	P44	LED (CD)	O	LED output : CD indication
4	SI1	S-MTOF	I	Serial communication data input (mecha. control)	36	P43	LED (SIDE A)	O	LED output : Side A indication
5	SO1	S-FTOM	O	Serial communication data output (mecha. control and character generator)	37	P42	SEG K	O	Display segment output
6	P94	XOSDCS	O	Character generator (PD0234A) CS output (L : enable)	38	P41	SEG J		
7	P95	Not used	O	NC	39	P40	SEG I		
8	P96	XMIC ON	O	MIC MIX (L : ON, H : OFF)	40	P50	SEG H		
9	P97	POWER ON	O	Power supply switching output of the MOTHER ASSY	41	P51	SEG G		
10	AVCC	———	I	+5V power supply	42	P52	SEG F		
11	P00	KEYIN3	I	Key data input	43	P53	SEG E		
12	P01	KEYIN2			44	P54	SEG D		
13	P02	KEYIN1			45	P55	SEG C		
14	P03	ECHO VR	I	Echo volume	46	P56	SEG B		
15	P04	MIC SW	I	MIC SW (L : Normal mode, H : Karaoke mode)	47	P57	SEG A		
16	P05	Not used	I	+5V	48	VDISP	-27V	I	-27V
17	P06	LANG SW	I	OSD language switch (L : Japanese, H : English, M : Chinese)	49	P60	G10	O	Display grid output
18	P07	P/OEM	I	OEM switch (L : PIONEER, H : YAMAHA)	50	P61	G9		
19	AVSS	———	I	GND	51	P62	G8		
20	TEST	Not used	I	GND	52	P63	G7		
21	X2	Not used	O	NC (OPEN)	53	P64	G6		
22	X1	Not used	I	+5V	54	P65	G5		
23	VSS	GND	I	GND	55	P66	G4		
24	OSC1	———	I	Main system clock oscillation (8MHz)	56	P67	G3		
25	OSC2	———	O		57	P70	G2		
26	XRST	XRESET IN	I	CPU reset (L : RESET)	58	P71	G1		
27	IRQ0	SHAKE	I/O	Mechanism control serial communication requirement	59	P72	LED (DISOFF)	O	LED output : Display OFF indication
28	IRQ1	SEL IR	I	Remote control input	60	P73	LED(QCKTRN)	O	LED output : Quick turn indication
29	P14	FSX	I	For error rate measurement	61	P74	BASBST1	O	Bass boost level BST2, BST1=LL : OFF, LH : LEVEL1, HL : LEVEL2, HH : LEVEL3
30	P15	EFLG	I	For error rate measurement	62	P75	BASBST2	O	
31	P16	Not used	I	GND	63	P76	XDSPCS	O	DSP(PDQ001A) communication requirement output
32	P47	DOGFOOD	O	Pulse output for WATCH DOG	64	P77	XDSP ON	I	DSP input mode select (L : DSP select, H : Through

■PDG178A (FLKY ASSY : IC101)(FOR CLD-D590 AND CLD-D390)

• MODE CONTROL IC

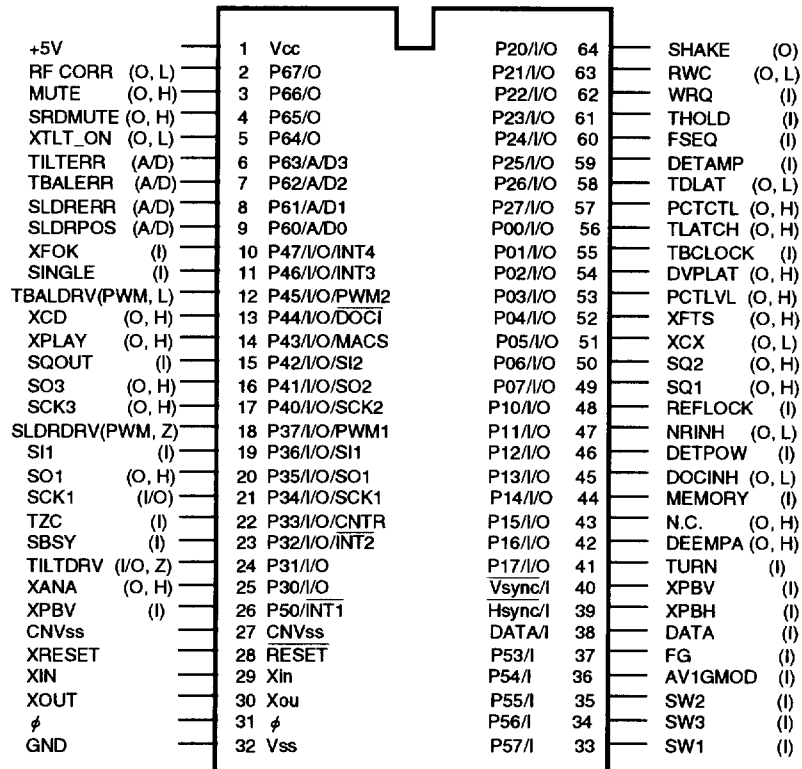
•Pin Function

No.	Pin name	I/O	Function	No.	Pin name	I/O	Function
1	PH0	I	Connect to +5V. (Not used)	33	KS2	O	Key scan output
2	PH1	I	Connect to +5V. (Not used)	34	KS1		
3	NC	I	Connect to +5V. (Not used)	35	KS0		
4	PE6	O	Standby LED	36	k	O	Display segment output
5	ACK	O	Mecha. control serial communication requirement output	37	j		
6	XCS	O	Character generator (PD0234A) chip select output (L : enable)	38	i		
7	PB2	I	Connect to +5V. (Not used)	39	h		
8	WDF	O	Pulse output for WATCHDOG	40	g		
9	MIC SW	I	MIC SW (L : Normal mode, H : Karaoke mode)	41	f		
10	XSCK	I/O	Serial communication clock (mecha. control and character generator)	42	e		
11	S M to F	I	Serial communication data input (mecha. control)	43	d		
12	S F to M	O	Serial communication data output (mecha. control and character generator)	44	c		
13	KIN0	I	Key data input	45	b		
14	KIN1			46	a		
15	KIN2			47	G10	O	Display grid output
16	KIN3			48	G9		
17	KIN4			49	G8		
18	POWER ON	O	Power supply switching output of the MOTHER ASSY	50	G7		
19	XMIC ON	O	MIC MIX (L : ON, H : OFF)	51	G6		
20	PC7	O	NC (OPEN) (Not used)	52	G5		
21	QCK LED	O	LED output : Quick turn indication	53	G4		
22	DOF LED	O	LED output : Display OFF indication	54	G3		
23	OTC LED	O	LED output : One touch karaoke indication	55	G2		
24	B LED	O	LED output : Side B indication	56	G1		
25	A LED	O	LED output : Side A indication	57	-27V	I	-27V
26	LD LED	O	LED output : LD tray open/close indication	58	EFLAG	I	EFM decoder error correction state signal
27	CD LED	O	LED output : CD tray open/close indication	59	SHAKE	I	Mecha. control serial communication requirement input
28	XRESET	O	MOTHER ASSY reset output	60	FSX	I	EFM decoder 7.35MHz frame sync. signal
29	RESET	I	CPU reset (L : reset)	61	PE3	I	Connect to +5V. (Not used)
30	OSC1	I	Main system clock oscillation (8MHz)	62	SEL IR	I	Remote control input
31	OSC2	O		63	PE5	I	Connect to +5V. (Not used)
32	Vss	—	GND	64	Vdd	—	+5V

■ PD0240B2 (MOTHER ASSY : IC101)

• MECHANISM CONTROL IC

• Pin Arrangement (Top View)



• Pin Function

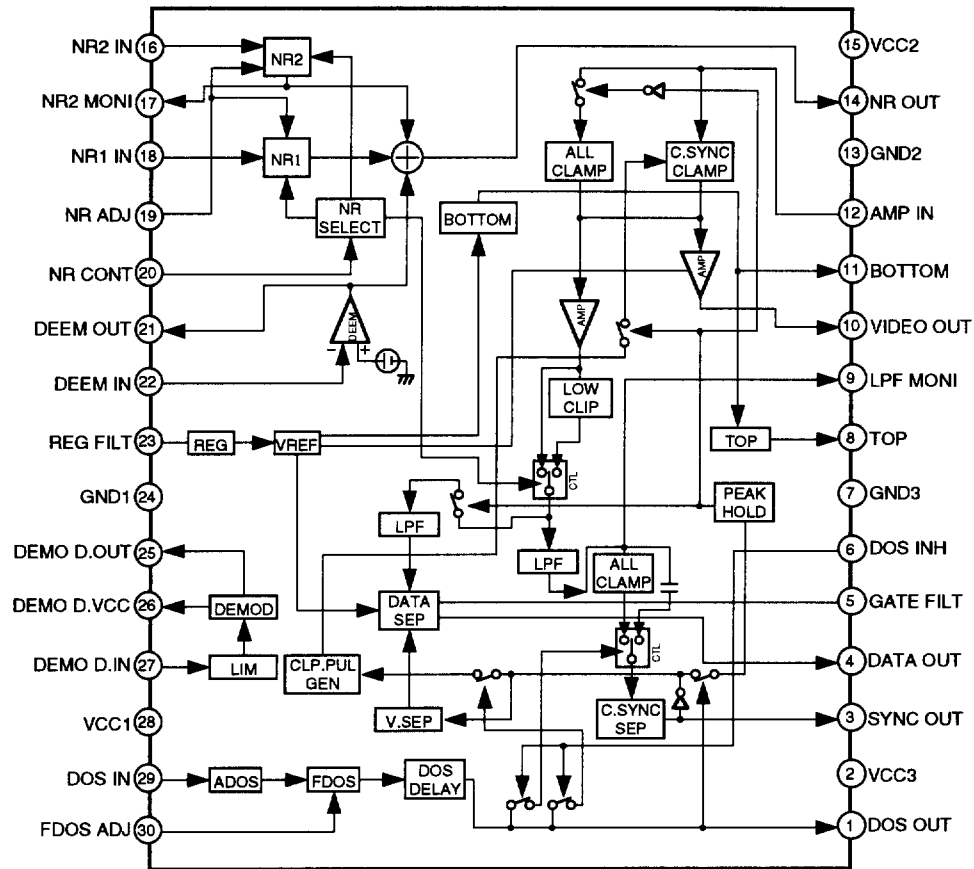
No.	Pin Name	I/O	Function
1	VCC	I	Power supply pin Apply 5V±10%
2	RFCORR	O	RF correction switch signal output H : Gain UP CD, CDV-A : Low, CAV inner circuit gain up, others are High
3	MUTE	O	Audio mute control signal output of audio system L : Release MUTE H : MUTE
4	SRDMUTE	O	Mute control signal output for AC3 Release MUTE during playback. L : Release MUTE H : MUTE
5	XTILT_CN	O	Tilt operation information L : During operation In the OPEN/CLOSE, the voltage will up about 10% by using this port.
6	TILTERR	I A/D	This signal is A/D converted as the tilt servo control input. Control the tilt motor so that this signal becomes 2.5V.
7	TBALEERR	I A/D	Tracking balance error signal input This signal is A/D converted as the tracking offset control input.
8	SLDERR	I A/D	This signal is A/D converted as the slider servo control input. Control the tilt motor so that this signal becomes 2.5V.
9	SLDPOS	I A/D	Pickup position detection switch input Detect the position by reading A/D input value which each switches are resistance divided.
10	XFOK	I	Focus servo lock signal input L : Lock H : Unlock Use for lock detection of focus servo.
11	SINGLE	I	ATT-SW of rear panel use for the single mode This information transmit to mode control by communication. L : Single H : Normal
12	TBALDRV	O PWM	Output the tracking offset signal to PWM output, then use for auto tracking offset. 910 μsec period, tri-state control H, L, Z
13	XCD	O	LD/CD switch signal output L : CD H : LD
14	XPLAY	O	Signal output during spindle servo L : During servo H : During acceleration, brake and stop
15	SQOUT	I	Command data input from DSP Read out SUBQ
16	SO3	O	Serial 3 data signals output Serial signals are common used and signal distinguishes from the latch signals (DVPLAT and TLAT).
17	SCK3	O	Serial 3 clock signals output
18	SLDRV	O PWM	Slider control signal output 5V=FWD, 0V=REV, 2.5V=STOP 910 μsec period, tri-state control H, L, Z

No.	Pin Name	I/O	Function
19	SI1	I	Data input from the mode control IC
20	SQ1	O	Serial data output to the mode control IC
21	SCK1	I/O	Clock for serial communication with the mode control IC Becomes input mode without communicate with the mode control IC
22	TZC	I INT	Tracking error zero cross signal input Monitor this signal when searching track count in the miss clamp detection.
23	SBSY	I	Interrupt input for reading sub-code from DSP
24	TILTDRV	I/O	LOAD/TILT control output 0.5V-Tray IN, OUT/Tilt DOWN, UP 2.5V-STOP Use for tilt servo that tilt drive is PWM output.
25	XANA	O	Digital/Analog audio switch signal output L : Analog H : Digital
26	XPBV	I	Playback vertical sync. signal input of LD/CDV L : During vertical sync.
27	CNVss	I	Ground for A/D conversion
28	XRESET	I	Reset signal input L : Reset H : Release reset Mode control is controlled.
29	XIN	I	9MHz clock oscillation input
30	XOUT	O	9MHz clock oscillation output
31	N.C.	O	Not used
32	GND	I	Ground
33	SW1	I	Switch input for Loading/Tilt position detection
34	SW2		
35	SW3		
36	AV1GMOD	I	AV1 gijutu mode When this port set to H, anti-shock control will be effective by Address C-bit2 from the mode control.
37	FG	I	Spindle motor FG signal input 16 outputs per rotation Used after dividing by 2 in microprocessor
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller
39	XPBH	I	Playback H-SYNC input for Phillips code decoder
40	XPBV	I	Playback V-SYNC input for Phillips code decoder
41	TURN	I	Turn switch input H : side A L : side B
42	DEEMPA	O	DSP deemphasis control L : OFF H : ON
43	N.C.	O	Not used
44	MEMORY	I	Memory model discrimination H : Memory model L : Non-memory model
45	DOCINH	O	Control the clamp pulse and clamp killer by tri-state value
46	DETPOW	I	Use for power abnormal signal input port. L : Normal H : Abnormal
47	NRINH	O	Control output of the noise reduction switch signal output L : NR ON H : NR OFF
48	REFLOCK	I	Reference signal input from DVP L : Phase not aligned H : Phase aligned (Non-memory)
49	SQ1	O	Analog audio switch signal output 1/L L : Squelch OFF H : Squelch ON
50	SQ2	O	Analog audio switch signal output 2/R L : Squelch OFF H : Squelch ON
51	XCX	O	Analog audio CX noise reduction switch signal output L : CX ON H : CX OFF
52	XFTS	O	Serial command output switch signal output of DSP/others L : DSP H : others
53	PCTLVL	O	Signal output for the picture quality adjustment L : SHARP2 (strong) H : SHARP1 (weak)
54	DVPLAT	O	PD0234A serial latch signal output Latches at falling edge.
55	TBCLOCK	I	Spindle lock signal input L : Unlock H : Lock
56	TLATCH	O	DAC & digital filter PD2026B serial control latch signal output Latches at falling edge.
57	PCTCTL	O	Outline correction signal output L : Correction OFF H : Correction ON
58	TDLAT	O	Latch signal for three-dimensional IC control Latches at falling edge.
59	DETAMP	I	Spindle over-current detection signal input L : Over current H : Normal
60	FSEQ	I	Subcode sync. conformity detection signal input L : Not conformity H : Conformity
61	THOLD	I	Track jump accelerating / decelerating signal input L : other H : accelerating / decelerating
62	WRQ	I	Subcode Q reading OK signal input L : NG H : OK This pin will be H when Subcode Q data passed by CRC check.
63	RWC	O	DSP read / write command signal output L : Read H : Write
64	SHAKE	I/O	Handshake signal for data communication with the mode control IC This pin is the bilateral data line and each microprocessor control the Input / Output.

■ LA7134M (MOTHER ASSY : IC400)

• VIDEO IC

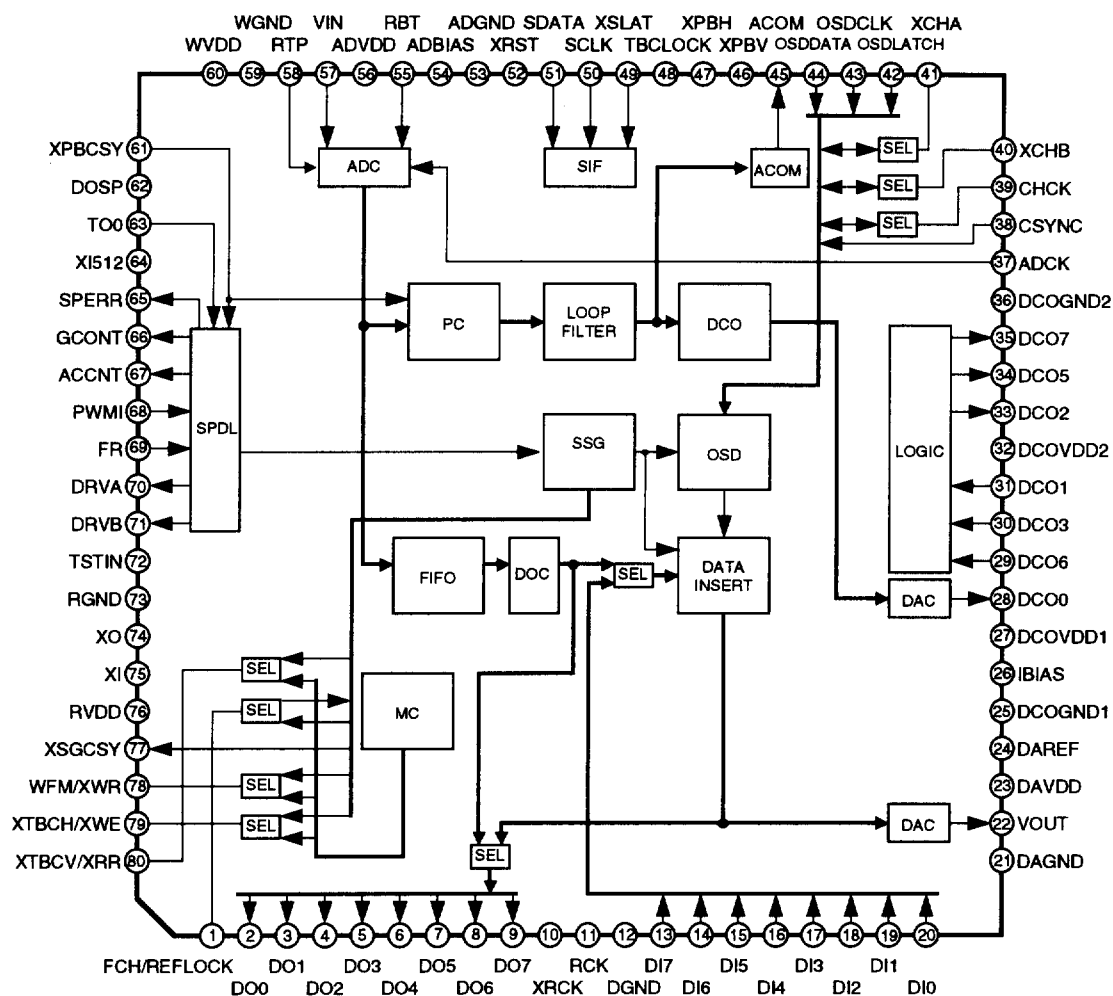
• Block Diagram



PD0234A (MOTHER ASSY : IC500)

• DVP

•Block Diagram



CLD - D790, CLD - D590, CLD - D390

•Pin Function

No.	Pin Name	I/O	Function	
1	FCH	I	MEMSYS:1	Switch the field of SSG by "H"
	REFLOCK	O	MEMSYS:0	Outputs "H" when the phase difference of H/V sync. signal associated with the time-base-corrected video signal and those associated with SSG is small enough.
2	DO0	O	Outputs the digital data of the time-base-corrected video signal for the memory system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), output for field memory and external output are common used. Perform the data output setting with the serial command. DO7 : MSB , DO0 : LSB	
3	DO1			
4	DO2			
5	DO3			
6	DO4			
7	DO5			
8	DO6			
9	DO7			
10	XRCK	O	Inverting outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.	
11	RCK	O	Outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.	
12	DGND	—	Ground of digital system Connect to GND.	
13	DI7	I	Digital video signal input Outputs the field memory when using the internal memory controller (MEMSYS:1 & EXTMC:0) and inputs the external signal when using the external A/D. DI7 : MSB , DI0 : LSB	
14	DI6			
15	DI5			
16	DI4			
17	DI3			
18	DI2			
19	DI1			
20	DI0			
21	DAGND	—	Ground for DAC Connect to GND.	
22	VOUT	O	DAC output of the time-base-corrected video signal	
23	DAVDD	—	Power supply for DAC Connect to GND.	
24	DAREF	—	Reference pin for DAC Normally, decoupling to the DAGND through the 0.1 μ F laminated ceramic capacitor.	
25	DCOGND1	—	Ground for DCO Connect to GND.	
26	IBIAS	—	Current setting pin of the bias circuit Normally, connect to DAGND through the 10k Ω resistor.	
27	DCOVDD1	—	Power supply for DCO Connect to +5V.	
28	DCO0	O	DCO output pin Outputs a fsc in synchronization with the input video signal. This signal is multiplied by 4 to produce CLK of writing system.	
29	DCO6	I	Waveform shaping input pin 6 Inputs a signal obtained by delaying the DCO5 output signal by 35 ns. (to be self biased)	
30	DCO3	I	Waveform shaping input pin 3 Inputs a signal obtained by delaying the DCO5 output signal by 70 ns. (to be self biased)	
31	DCO1	I	Waveform shaping input pin 1 Inputs a DCO0 output signal via the fsc BPF. (to be self biased)	
32	DCOVDD2	—	Power supply for output multiplied by 4 Connect to +5V.	
33	DCO2	O	Waveform shaping input pin 2 Outputs a signal obtained through waveform shaping of the DCO0 output signal.	
34	DCO5	O	Waveform shaping input pin 5 Outputs a signal multiplied by 2.	
35	DCO7	O	Waveform shaping input pin 7 Outputs a signal multiplied by 4.	
36	DCOGND2	—	Ground for output multiplied by 4 Connect to GND.	
37	ADCK	I	CLK input for writing system Inputs DCO7 output signal via a 4fsc BPF. (to be self biased)	
38	CSYNC	I	Composite sync. input for character generator When using the OSD for single (EXTMIX:1), input the composite sync. for generating the character.	
39	CHCK	I	EXTMIX :1	CLK input for character generator Inputs 2fsc.
	CHCK	O	EXTMIX :0	CLK output for character generator Outputs 2fsc.
40	XCHB	O	EXTMIX :1	Blanking signal output
	XCHB	I	EXTMIX :0	Blanking signal input Inputs "L" when inserting the blanking signal.
41	XCHA	O	EXTMIX :1	Character signal output
	XCHA	I	EXTMIX :0	Character signal input Inputs "L" when inserting the character signal.
42	OSDLATCH	I	Latch input for OSD Serial transmission of the OSD control data is able to accept by this pin set to "L".	
43	OSDCLK	I	CLK input for reading the OSD data	

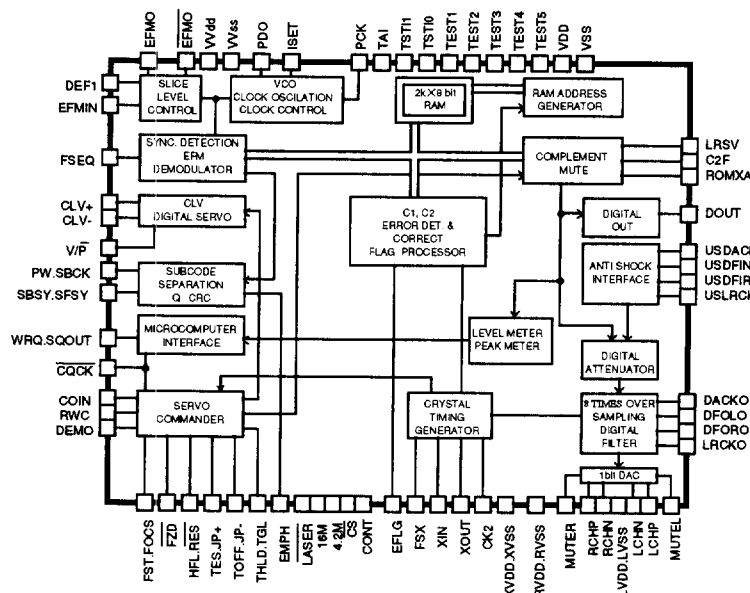
No.	Pin Name	I/O	Function
44	OSDDATA	I	Control data input for OSD Read the data in synchronization with CLK which input to OSDCLK pin.
45	ACOM	O	Jitter correction signal output for analog audio Use for cancelling the jitter element of analog audio.
46	XPBV	O	PB system V sync. output Outputs the signal obtained by separating V sync. signal from the signal at pin 61 (XPBCSY) with negative logic.
47	XPBH	O	PB system H sync. output Outputs the signal obtained by separating H sync. signal from the signal at pin 61 (XPBCSY) with negative logic.
48	TBCLOCK	O	PLL lock detection signal output Outputs "H" when the spindle loop and the TBC loop are locked.
49	XSLAT	I	Serial interface latch input Gives the latch timing for data applied to the serial interface. Latches at "L".
50	SCLK	I	CLK input for the serial interface SDATA value will be read at the rising edge.
51	SDATA	I	Data input pin for the serial interface
52	XRST	I	System reset input Input for initializing the internal register of IC with negative logic.
53	ADGND	—	Ground for ADC Connect to GND.
54	ADBIAS	—	NC or connect to ADGND.
55	RBT	I	ADC bottom reference input Gives the bottom reference voltage of ADC.
56	ADVDD	—	Power supply for ADC Connect to +5V.
57	VIN	I	ADC input Inputs the composite video signal.
58	RTP	I	ADC top reference input Gives the top reference voltage of ADC.
59	WGND	—	Ground for writing system Connect to GND.
60	WVDD	—	Power supply for writing system Connect to +5V.
61	XPBCSY	I	Inputs the composite sync. signal of PB system with negative logic.
62	DOSP	I	Inputs the dropout detection pulse with positive logic.
63	TOO	I	Inputs the tracking-servo open signal with positive logic.
64	XI512	O	Outputs a 1/512th division of the CLK of reading system.
65	SPERR	O	PFD error output of the spindle error It outputs the result of comparison (PFD) between PBH and reading system H in tristate.
66	GCONT	O	Spindle gain control output Outputs a PWM signal according to the serial-command specified value.
67	ACCNT	O	Acceleration control output Tristate output of the acceleration/deceleration signal, which depends either on the forced acceleration/deceleration signal, the error detection by serial command or error detection by H sync. signal.
68	PWMI	I	Spindle error PWM input Inputs a signal obtained through the voltage comparison between the spindle error signal which has passed through a loop filter and the chopping wave.
69	FR	I	Spindle error direction element input Inputs a signal obtained through the voltage comparison between the spindle error which has passed through a loop filter and the destination voltage.
70	DRVA	O	Output for driving the spindle motor driver It is applicable to either a brush or brushless motor, selection of which is by a serial command.
71	DRVB		
72	TSTIN	I	Input for IC test Fixed to "L".
73	RGND	—	Ground for reference system Connect to GND.
74	XO	O	Connect the X'tal. Connect the 8fsc when using the internal memory controller (MEMSYS:1 & EXTMC:0) and the 4fsc is at others.
75	XI	I	
76	RVDD	—	Power supply for reference system Connect to +5V.
77	XSGCSY	O	Internal SSG composite sync. output Outputs the composite sync. signal of the internal SSG with negative logic. It can be delayed by a serial command with a specified delay duration.
78	WFM	O	MEMSYS:1 & EXTMC:1 Field monitor output of write system Outputs "H" for the odd field.
	XWR	O	MEMSYS:1 & EXTMC:0 Write reset output Outputs a signal to initializing the writing address of field memory. Outputs "L" pulse for 1CLK on every field of write system. Connect to XWRST input of field memory.
79	XTBCH	O	MEMSYS:1 & EXTMC:1 TBC H sync. output Outputs the time-base-corrected H sync. signal with negative logic.
	XWE	O	MEMSYS:1 & EXTMC:0 Write enable output Control the writing operation of field memory. "L" for enable and "H" for disenable. Connect to XWE input of field memory.
80	XTBCV	O	MEMSYS:1 & EXTMC:1 TBC V sync output Outputs the time-base-correcter V sync. signal with negative logic.
	XRR	O	MEMSYS:1 & EXTMC:0 Read reset output Outputs a signal to initializing the reading address of field memory. Outputs "L" pulse for 1CLK on every each field of read system. Connect to XRRST input of field memory.

CLD - D790, CLD - D590, CLD - D390

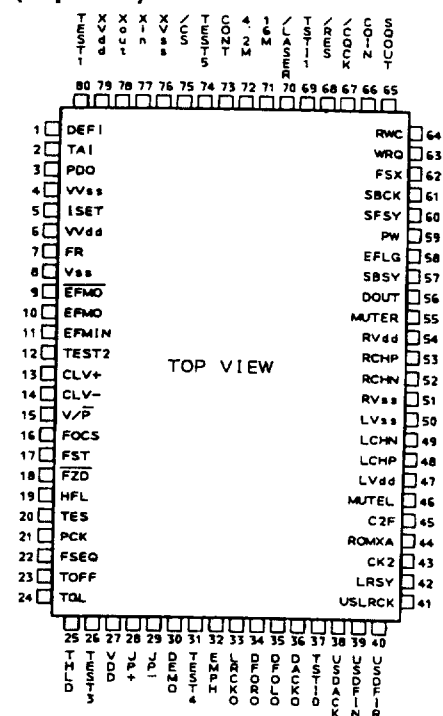
■ LC78620E (MOTHER ASSY : IC802)

• SERVO CONTROLLER & EFM DEMODULATOR

• Block Diagram



• Pin Arrangement (Top View)

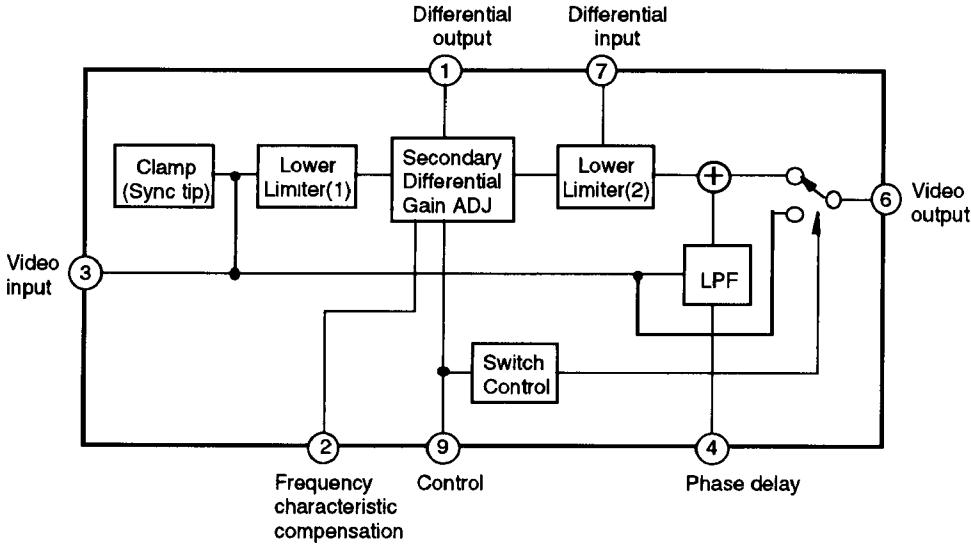


• Pin Function

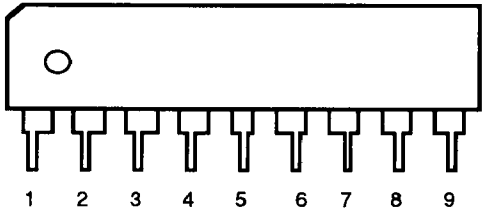
No.	Pin Name	I/O	Function
1	DE-FI	I	Defect detection signal (DEF) input pin ("L" at not used)
2	TAI	I	Test input pin with pull-down resistor
3	PDO	O	Phase comparison output for controlling the external VCO
4	V Vss	—	Power supply for PLL and internal VCO Normally, 0V.
5	ISET	AI	Connect a resistor for current adjustment of PDO output
6	V VDD	—	Ground for internal VOO Normally, 5V.
7	FR	AI	For VCO frequency range adjustment
8	Vss	—	Ground for digital system Normally, 0V.
9	EFMO	O	For slice level control EFM signal inversion output
10	EFMO	O	EFM signal output
11	EFMIN	I	EFM signal input
12	TEST2	I	Test input pin with pull-down resistor
13	CLV+	O	Output pin for controlling the spindle servo Acceleration for CLV+ is "H" and Deceleration for CLV- is "H".
14	CLV-	O	Tristate output is able to output with command
15	V/P	O	Automatic switching monitor output of rough servo/phase control H : Rough servo , L : Phase control mode
16	FOCS	O	Output pin for focus servo ON/OFF Focus servo ON for "L"
17	FST	O	Focus start pulse output (open drain output)
18	F2D	I	Focus error zerocross signal input ("L" at not used)
19	HFL	I	Track detection signal input (schmitt input)
20	TES	I	Tracking error signal input (schmitt input)
21	PCK	O	Clock monitor output for EFM data playback (4.3218MHz at phase clock)
22	FSEQ	O	Sync. signal detection output Becomes "H" when the sync. signals between the detected sync. signal from EFM signal and internal generated sync. signal are aligned.
23	TOFF	O	Tracking OFF output
24	TGL	O	Output pin for output tracking gain switch Gain up for "L".
25	THLD	O	Tracking hold output
26	TEST3	I	Test input pin with pull-down resistor

■NJM2209S (YCPB ASSY : IC3002)(CLD-D790 ONLY)
• VIDEO ENHANCER

•Block Diagram



•Pin Assignment

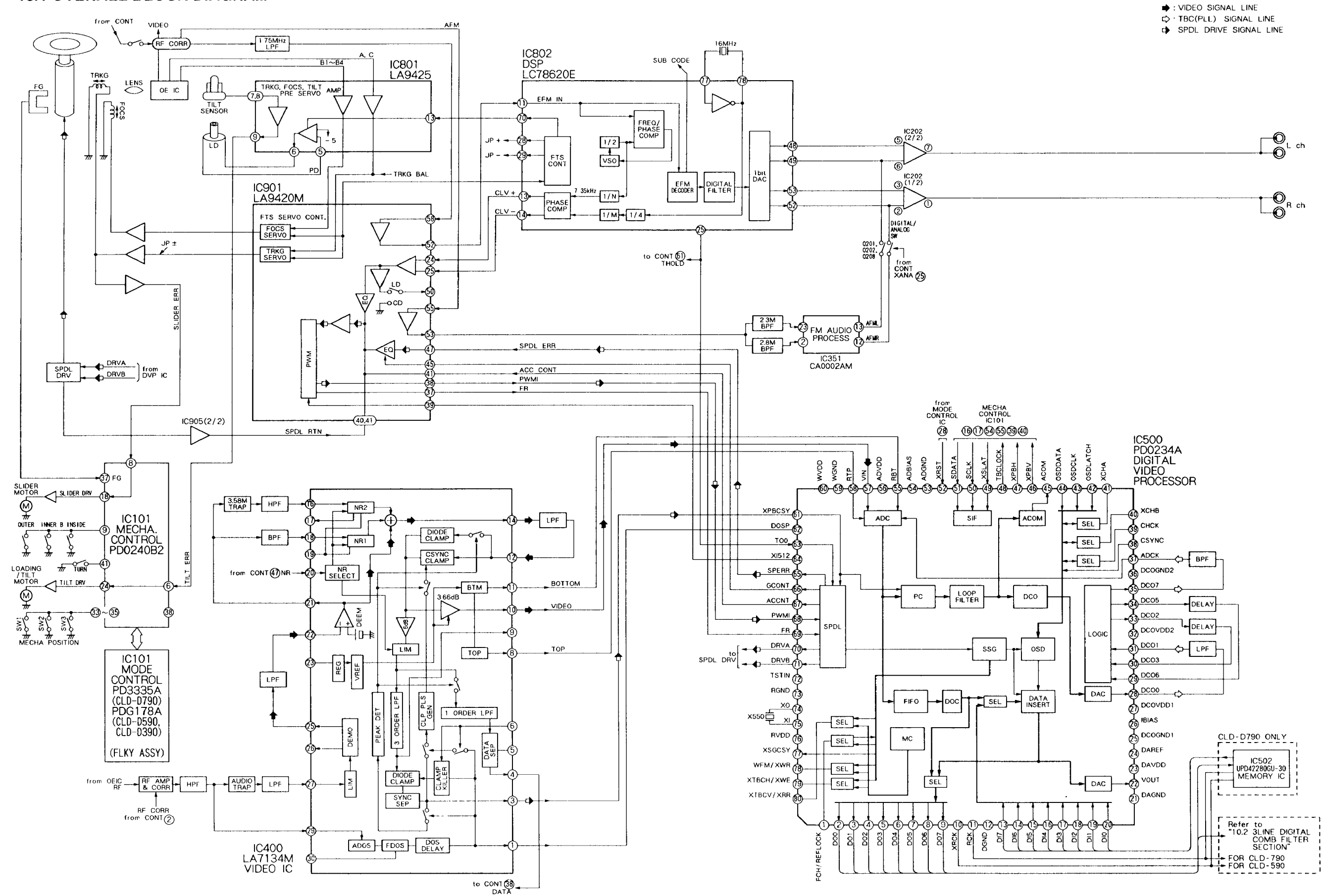


•Pin Function

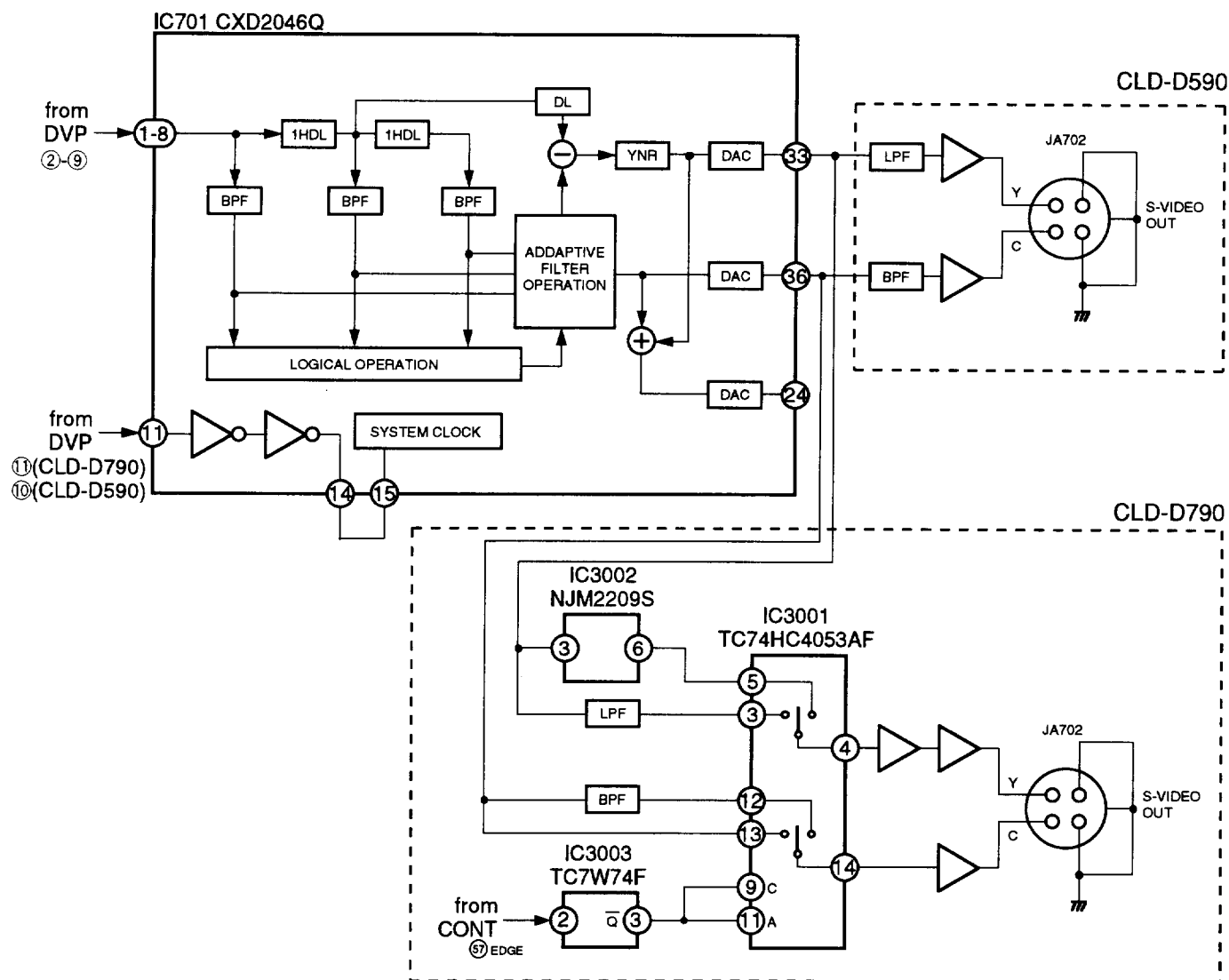
No.	Function
1	Differential output (open-collector)
2	Frequency characteristic compensation
3	Video input
4	Phase delay
5	GND
6	Video output
7	Differential input
8	V+ (5V)
9	Control input (open and not used)

No.	Pin Name	I/O	Function
27	VDD		Power supply for digital system Normally, 5V.
28	JP+	O	Output pin for track jump When JP+ is "H" , Acceleration in the outer direction jump or Deceleration in the inner direction jump.
29	JP-		When JP- is "H" · Acceleration in the inner direction jump or deceleration in the outer direction jump. Tristate output is able to output with the bcommand.
30	DEMO	I	Sound output function input for the player adjustment with pull-down resistor
31	TEST4	I	Test input pin with pull-down resistor
32	EMPH	O	Deemphasis monitor output H : during playback the deemphasis disc
33	LRCKO	O	Word clock output
34	DFORO		R ch data output
35	DFOLO		L ch data output
36	DACKO		Bit clock output
37	TST10	O	Test output pin Open (Normally, output "L")
38	USDACK	I	Bit clock input
39	USDFIN		L ch and R ch data
40	USDFIR		Test input pin Normally, "L".
41	USLRCK	I	Antishock correspondence Input word clock input ("L" at not used)
42	LRSY	O	L/R clock output
43	CK2		Bit clock output DACLK (at RES) Polarity inversion (CK2COK mode)
44	ROMXA		Data output Data (complement) (at RES) ROMOUT (ROMXA mode)
45	C2F		C2 flag output
46	MUTEL	O	Mute output
47	L VDD		Power supply for L ch Normally, 5V.
48	LCHP	O	L ch P output
49	LCHN	O	L ch N output
50	LVSS		Ground for L ch Normally, 0V.
51	RVSS		Ground for R ch Normally, 0V.
52	RCHN	O	R ch N output
53	RCHP	O	R ch P output
54	RVDD		Power supply for R ch Normally, 5V.
55	MUTER	O	Mute output
56	DOUT	O	Digital OUT output
57	SBSY	O	Perion signal output of subcode block
58	EFLG	O	Correction monitor output of C1, C2, single and double
59	PW	O	Subcode P, Q, R, S, T, U and W output
60	SFSY	O	Period signal output of subcode frame Rise down when the subcode is stndbyed
61	SBCK	I	Subcode reading clock input (schmitt input)
62	FSX	O	7.35kHz sync. signal output which is divided the frequency from the crystal resonator.
63	WRQ	O	Standby output of subcode Q output
64	RWC	I	Read / Write control input
65	SQOUT	O	Subcode Q output
66	COIN	I	Command input from the microcomputer
67	CQCK	I	Command input take in clock or subcode take out clock Input from SQOUT (schmitt input)
68	RES	I	Chip reset input Once turn to "L" at the power ON
69	TST11	O	Test input pin Open (Normally, output "L")
70	LASER	O	Laser ON/OFF output Control with the serial data command from the microcomputer
71	16M	O	16.9344MHz output However, output 33.8688MHz in the fourfold speed playback mode.
72	4.2M	O	4.2336MHz output
73	CONT	O	Auxiliary output Control with the serial data command from the microcomputer.
74	TEST5	I	Test input pin with pull-down resistor
75	CS	I	Chip select input with pull-down resistor
76	XVSS		Ground for the crystal resonator Normally, 0V.
77	XIN	I	Connect the 16.9344MHz crystal resonator.
78	XOUT	O	Connect the 33.8688MHz crystal resonator in the fourfold speed playback system.
79	XVDD		Power supply for the crystal resonator Normally, 5V.
80	TEST1	I	Test input pin with pull-down resistor

10. BLOCK DIAGRAMS
10.1 OVERALL BLOCK DIAGRAM

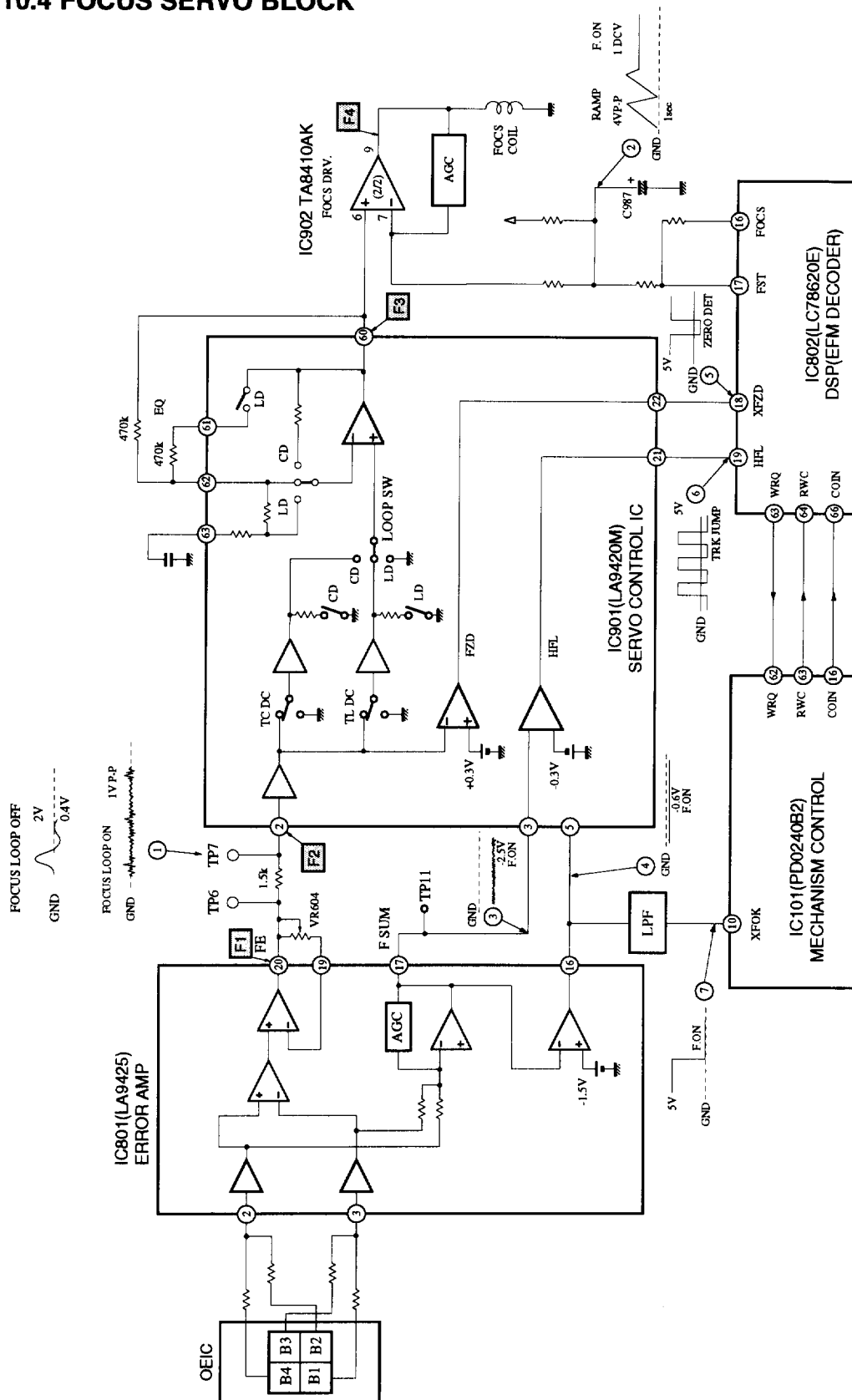


10.2 3 LINE DIGITAL COMB FILTER BLOCK (CLD-D790 AND CLD-D590 ONLY)

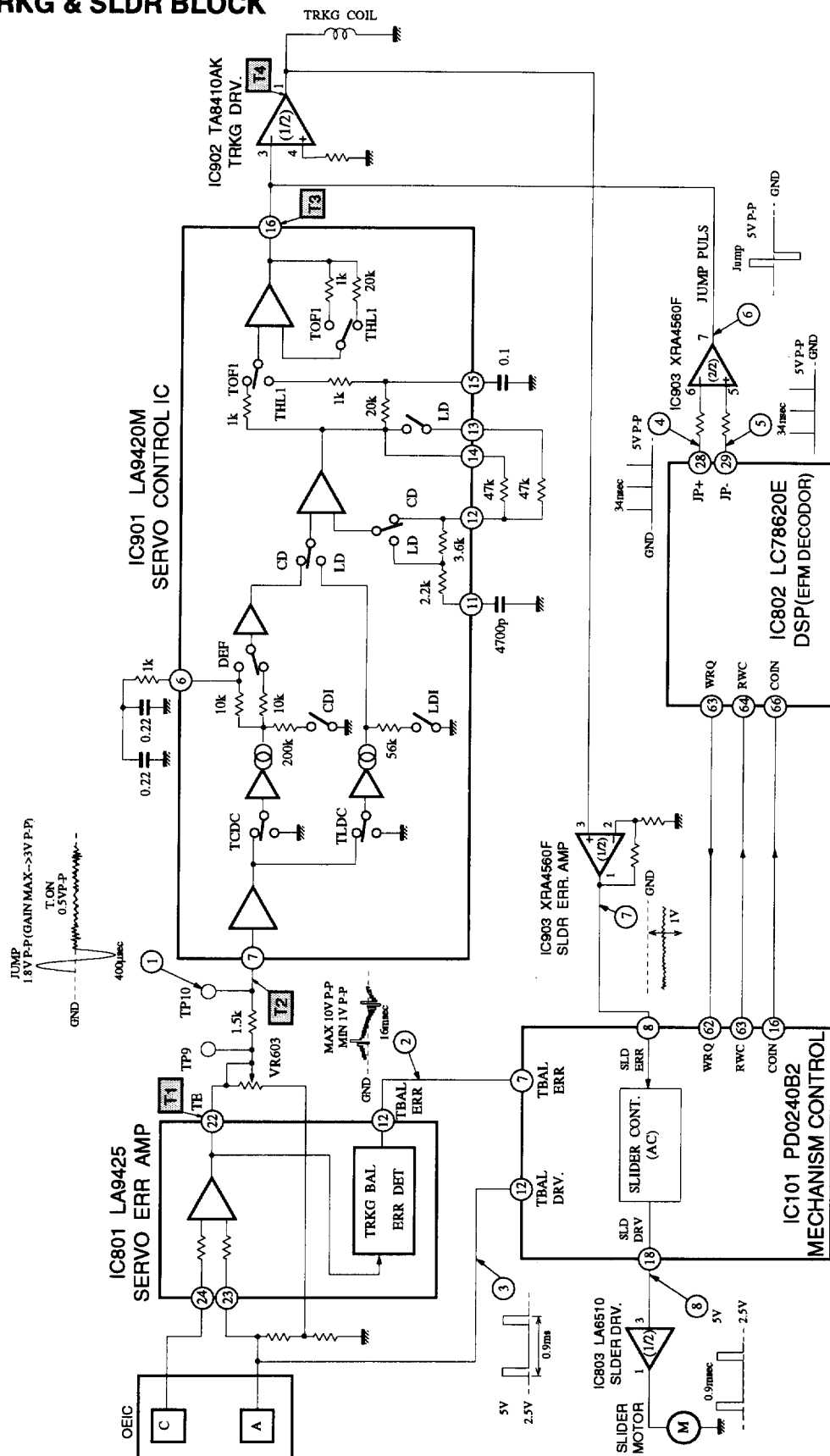




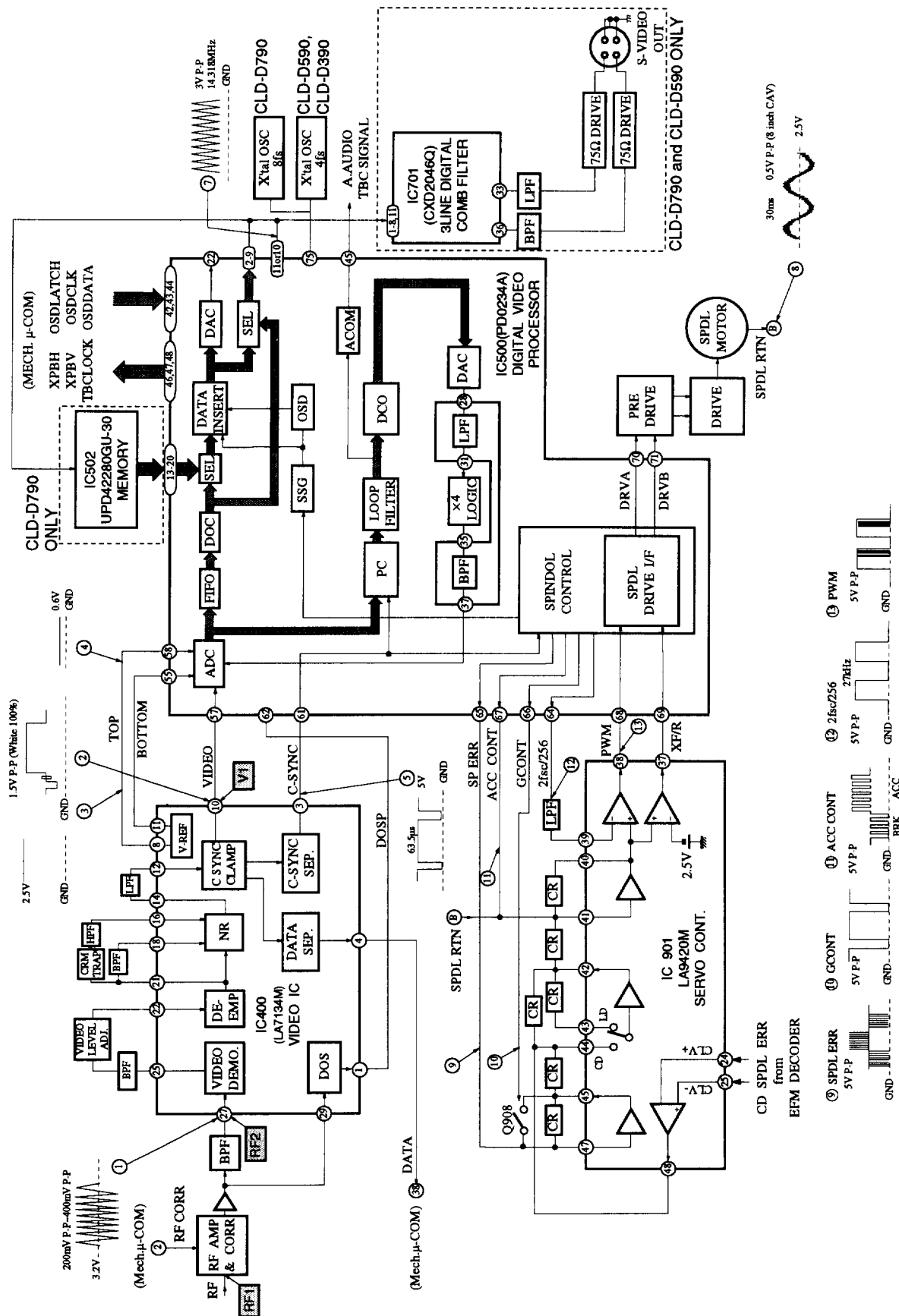
10.4 FOCUS SERVO BLOCK



10.5 TRKG & SLDR BLOCK

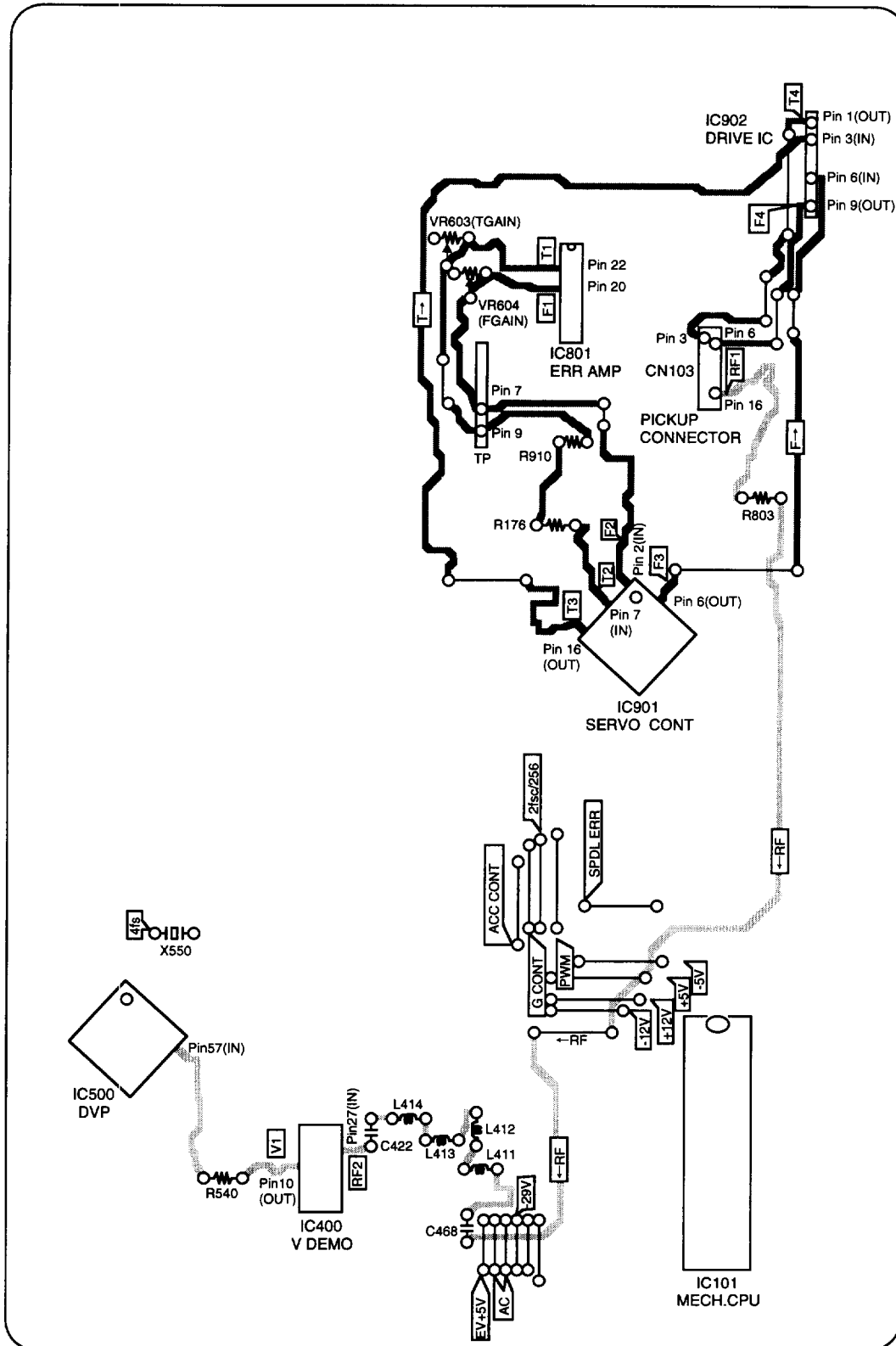


10.6 VIDEO & TBC BLOCK



10.7 DIAGNOSTIC LAND MARK AND PATTERN

MOTHER ASSY



[F1] is a Diagnostic land mark for signal check. [F→] shows the signal flow.

———— : FOCUS SERVO system

———— : TRKG SERVO system

~~~~~ : RF and VIDEO system

Signal flow : F1→F2→F3→F4

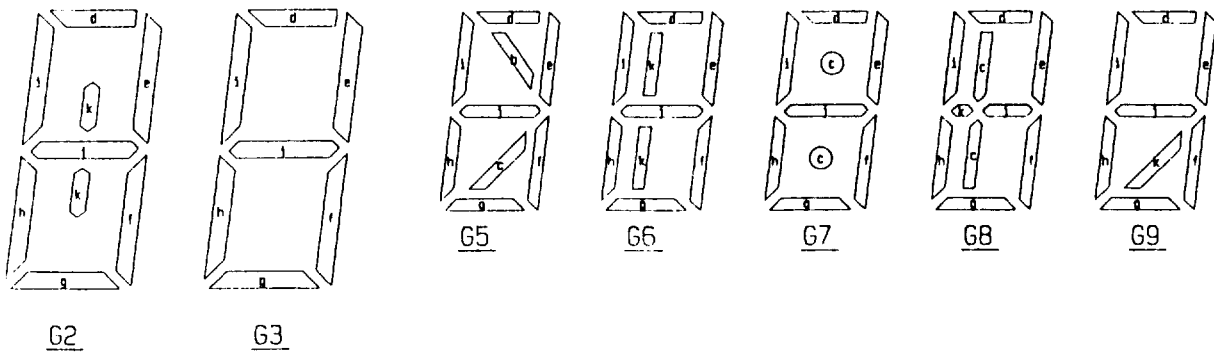
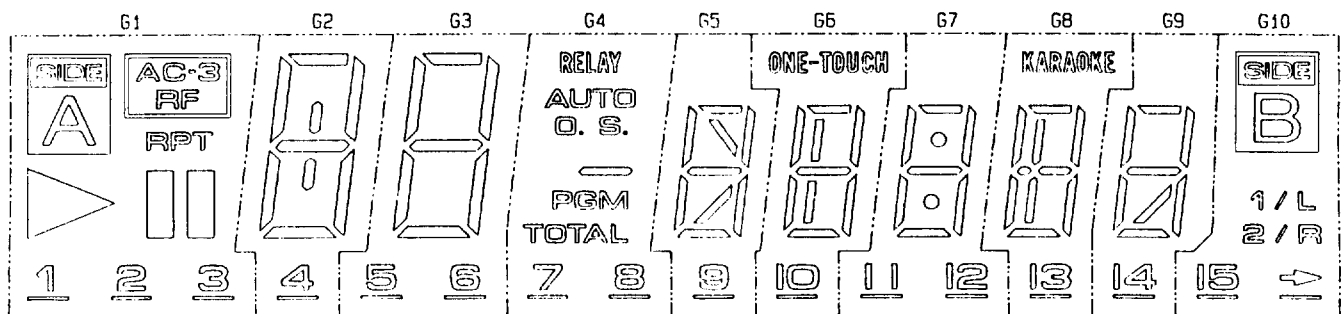
Signal flow : T1→T2→T3→T4

Signal flow : RF1→RF2→V1

## 11. FL INFORMATION

### ■ VAW1041 (FLKY ASSY : V101)

#### ● FL TUBE



#### ● ANODE GRID ASSIGNMENT & PIN ASSIGNMENT

|     | G1             | G2       | G3       | G4       | G5       | G6        | G7        | G8        | G9        | G10       |
|-----|----------------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| P1  | <u>1</u>       | <u>4</u> | <u>5</u> | <u>7</u> | <u>9</u> | <u>10</u> | <u>11</u> | <u>13</u> | <u>14</u> | <u>15</u> |
| P2  | <u>2</u>       |          | <u>6</u> | <u>8</u> | b        | ONE-TOUCH | <u>12</u> | KARAOKE   |           | <u>1</u>  |
| P3  | <u>3</u>       |          |          |          | c        |           | :         | c         |           |           |
| P4  | <u>A</u>       | d        | d        | RELAY    | d        | d         | d         | d         | d         | <u>B</u>  |
| P5  | <u>▶</u>       | e        | e        | AUTO     | e        | e         | e         | e         | e         | 1/L       |
| P6  | <u>  </u>      | f        | f        | O.       | f        | f         | f         | f         | f         | 2/R       |
| P7  | RPT            | g        | g        | S.       | g        | g         | g         | g         | g         |           |
| P8  | <u>AC-3 RF</u> | h        | h        | -        | h        | h         | h         | h         | h         |           |
| P9  |                | i        | i        | PGM      | i        | i         | i         | i         | i         |           |
| P10 |                | j        | j        | TOTAL    | j        | j         | j         | j         | j         |           |
| P11 |                | k        |          |          |          | k         |           | k         | k         |           |

#### ● PIN ASSIGNMENT

| Pin No.    | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17  |
|------------|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Assignment | F | F | NP | NL | NL | NL | NL | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | G9 | G10 |

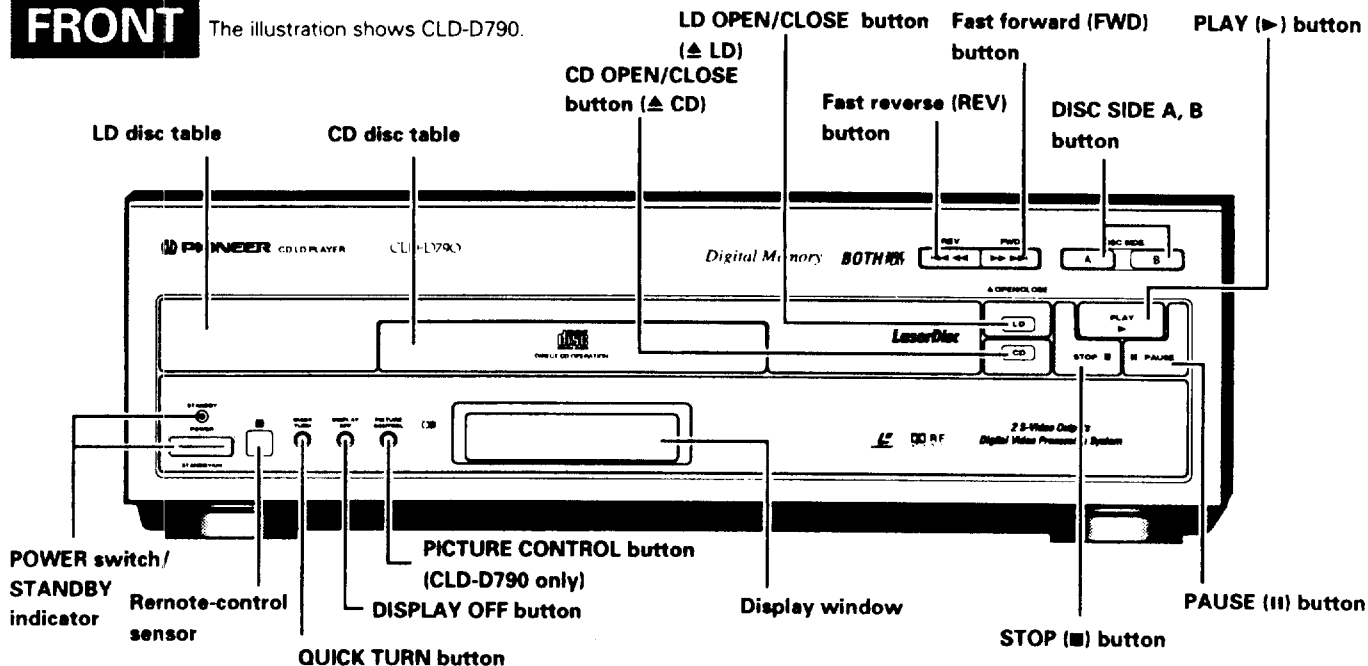
| Pin No.    | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27  | 28  | 29 | 30 | 31 | 32 | 33 | 34 |
|------------|----|----|----|----|----|----|----|----|----|-----|-----|----|----|----|----|----|----|
| Assignment | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | NL | NL | NL | NP | F  | F  |

F:Filament G1-G10:Grid P1-P11:Anode NP:No pin NL:No Lead

## 12. PANEL FACILITIES

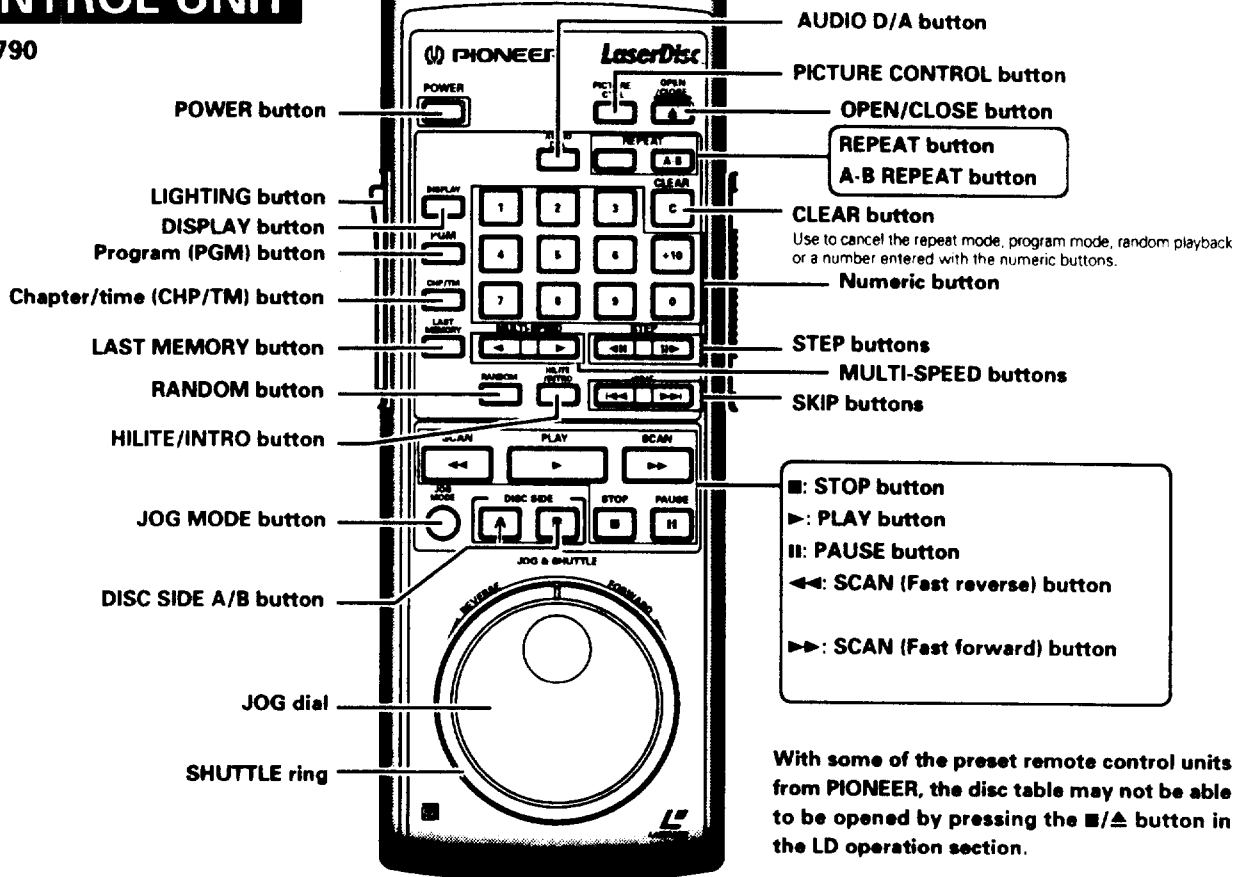
### FRONT

The illustration shows CLD-D790.

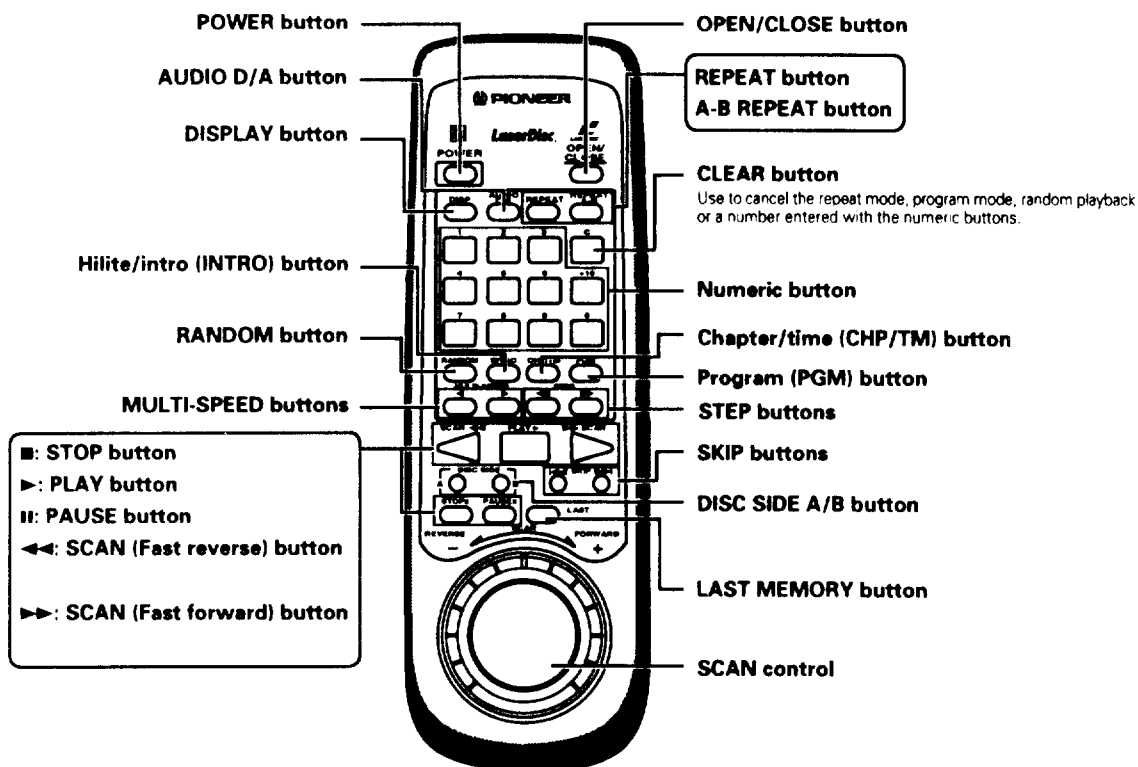


### REMOTE CONTROL UNIT

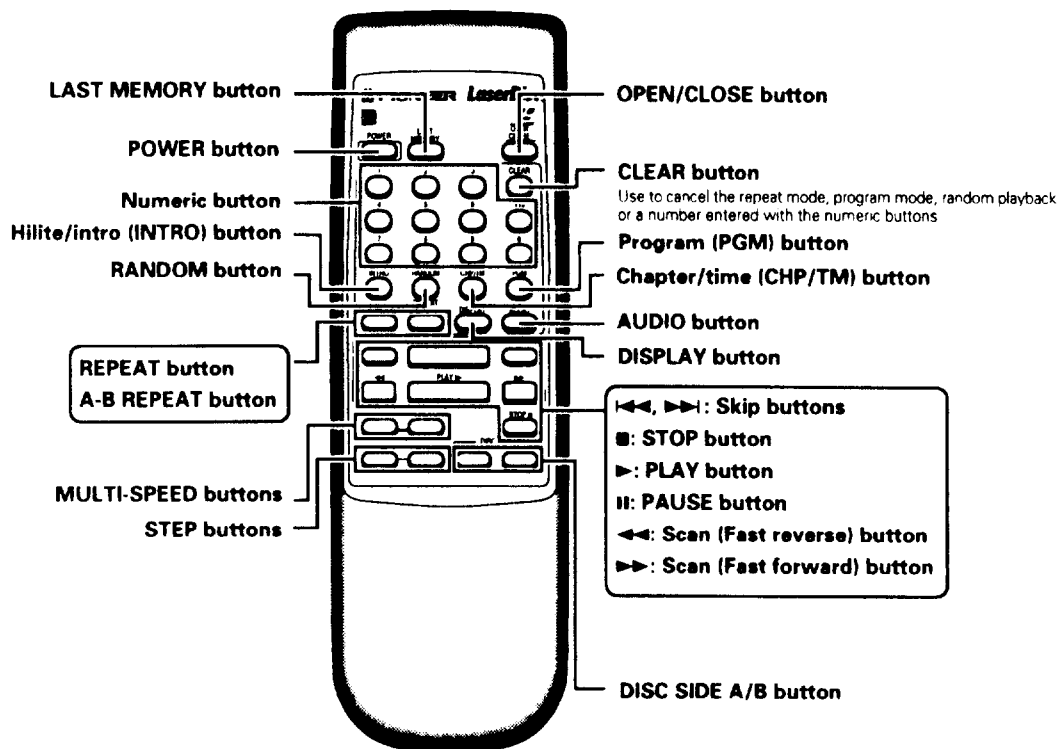
CLD-D790



# CLD-D590



# CLD-D390



## 13. SPECIFICATIONS

### General

|                             |                                                                           |
|-----------------------------|---------------------------------------------------------------------------|
| System .....                | LaserVision Disc system and Compact Disc digital audio system             |
| Laser .....                 | Semiconductor laser: wavelength 780 nm                                    |
| Power requirements: .....   | AC 110-240 V, 50/60 Hz                                                    |
| Power consumption .....     |                                                                           |
| CLD-D790 .....              | 39 W                                                                      |
| CLD-D590 .....              | 38 W                                                                      |
| CLD-D390 .....              | 37 W                                                                      |
| Weight .....                |                                                                           |
| CLD-D790 .....              | 6.7 kg                                                                    |
| CLD-D590 .....              | 6.6 kg                                                                    |
| CLD-D390 .....              | 6.6 kg                                                                    |
| Dimensions .....            | 420 (W) x 405 (D) x 132 (H) mm<br>(Not including protruding cables, etc.) |
| Operating temperature ..... | +5°C to +35°C                                                             |
| Operating humidity .....    | 5% to 85% (no condensation)                                               |

### Video Output (2 pairs)

|                    |                                                |
|--------------------|------------------------------------------------|
| Output level ..... | 1 Vp-p (75Ω when loaded, synchronous negative) |
| Jacks .....        | RCA jacks                                      |

### S-Video Output level (2 pairs)

(CLD-D790/CLD-D590 only)

|                                    |                  |
|------------------------------------|------------------|
| Y (luminance) - Output level ..... | 1 Vp-p (75 Ω)    |
| C (color) - Output level .....     | 286 mVp-p (75 Ω) |
| Jacks .....                        | S-VIDEO jacks    |

### Audio Output (2 pairs)

|                                   |                           |
|-----------------------------------|---------------------------|
| Output level .....                |                           |
| During analog audio output .....  | 200 mVrms (1 kHz, 40%)    |
| During digital audio output ..... | 200 mVrms (1 kHz, -20 dB) |
| Number of channels .....          | 2                         |
| Jacks .....                       | RCA jacks                 |

### Digital audio characteristics

CLD-D790/CLD-D590:

|                                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Frequency response .....        | 4 Hz to 20 kHz                                            |
| S/N ratio .....                 | 115 dB (EIAJ)                                             |
| Dynamic range .....             | 96 dB (EIAJ)                                              |
| Total harmonic distortion ..... | 0.0035% (EIAJ)                                            |
| Wow and flutter .....           | Limit of measurement<br>(±0.001% W. PEAK) or lower (EIAJ) |

CLD-D390:

|                                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Frequency response .....        | 4 Hz to 20 kHz                                            |
| S/N ratio .....                 | 102 dB (EIAJ)                                             |
| Dynamic range .....             | 92 dB (EIAJ)                                              |
| Total harmonic distortion ..... | 0.0055% (EIAJ)                                            |
| Wow and flutter .....           | Limit of measurement<br>(±0.001% W. PEAK) or lower (EIAJ) |

Specifications for LDs conforming to EIAJ.

### Other Terminals

|                                              |                             |
|----------------------------------------------|-----------------------------|
| CONTROL IN .....                             | Minijack (3.5ø)             |
| CONTROL OUT .....                            | Minijack (3.5ø)             |
| AC-3•RF OUTPUT .....                         | RCA jack                    |
| Optical digital output (CLD-D790 only) ..... | Optical digital jack        |
| VHF adapter .....                            |                             |
| (CLD-D590/CLD-D390 only) .....               | Both RCA jacks with DC jack |

### Accessories

|                                                           |   |
|-----------------------------------------------------------|---|
| Remote control unit .....                                 | 1 |
| AAA/R03 dry cell batteries (CLD-D790/CLD-D590 only) ..... | 2 |
| AA/R6P dry cell batteries (CLD-D390 only) .....           | 2 |
| Audio cord .....                                          | 1 |
| Video cord .....                                          | 1 |
| Power cord .....                                          | 1 |
| Operating Instructions .....                              | 1 |
| Warranty card .....                                       | 1 |

### NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.